MINISTRY OF NATURE,
ENVIRONMENT AND TOURISM
MONGOLIA

IMPLEMENTATION REVIEW STUDY REPORT
ON
THE PROJECT FOR CONSTRUCTION
OF
THE CENTER FOR FRESHWATER RESOURCES
AND NATURE CONSERVATION
IN
MONGOLIA

MARCH, 2010

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

YAMASHITA SEKKEI INC.
ECHO CORPORATION

Preface

In response to a request from the Government of Mongolia, the Government of Japan decided to conduct an Implementation Review Study on The Project For Construction of The Center for Freshwater Resources and Nature Conservation and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Mongolia a study team from November 22 to December 1, 2009.

The team held discussions with the officials concerned of the Government of Mongolia, and conducted a field study at the study area. After the team returned to Japan, further studies were made and the draft implementation review study report was explained and submitted to the Mongolian side.

As a result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Mongolia for their close cooperation extended to the teams.

March 2010

Izumi Takashima
Vice President
Japan International Cooperation Agency

Letter of Transmittal

We are pleased to submit to you the implementation review study report on The Project for Construction of The Center for Freshwater Resources and Nature Conservation in Mongolia.

This Study was conducted by the Consortium of Yamashita Sekkei Inc. and Environmental Consultants for Ocean and Human (ECHO), under a contract to JICA, during the period from October 2009 to March 2010. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Mongolia and formulated the most appropriate implementation review for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

March, 2010

Osamu Suzuki
Project Manager,
Implementation Review Study Team on
The Project for Construction of The Center
for Freshwater Resources and Nature Conservation
in Mongolia

Consortium of Yamashita Sekkei Inc. and
Environmental Consultants for Ocean and Human

Summary

1. Background

Mongolia is a landlocked country in the highlands of Central Asia with a population of approx. 274 million (2010 estimate) and about 1,567,000 km2 land area. Its GDP is US $ 1,880 million and GDP per capita is US$1,288 (2007). The main industry of the country is agriculture and stock farming, however, because of its biodiversity including having rare wildlife in the world, the importance of the tourism industry is growing year by year and it is now 10% of GDP.

However, during the market-oriented economic reform since the 1990s, the traditional nomadic life, which is compatible with resource use and environmental protection, collapsed and unregulated development took place. As a result, environmental issues such as a decline in the number of rare species and endangered species, soil contamination and water pollution due to the drainage from facilities for tourists, and air pollution from heating fuel consumption, have developed.

Under these circumstances, Mongolia is actively participating in the framework of an international nature conservation such as the Biodiversity Treaty (1992), International Convention to Combat Desertification (1994) and taking the position to focus on environmental conservation by declaring "Promotion of balanced and sustainable regional/local development" in its national plan "Economic Growth and Strategy for Poverty Reduction" (EGSPR). However, establishment of a nature conservation system has been delayed owing to a lack of environmental protection legislation, vulnerable administrative and implementation systems, lack of appropriate techniques for using natural resources, lack of conservation technology of rare wild animals and plants, lack of scientific data such as the number of individual habitats and so on.

The total of protected area (PA) is 25,000,000 ha which occupies one seventh of the total territory of Mongolia. Approximately 40% of the PA consists of lakes and rivers where environmental destruction is rapidly taking place due to pollution caused by mining development and the like. Because of this situation, it is an urgent matter to establish environmental conservation measures for management of freshwater ecosystem inhabit in these areas. In addition, there is currently no base for managing the nature conservation activities for endangered animals and plants that are affected by the unregulated development.

In this context, the Government of Mongolia requested a Grant Aid project from the Government of Japan for the establishment of a "Biodiversity Conservation Center" as a center for (1) environmental education of sustainable economical development and nature conservation, (2) research of animal/plants and survey for effective utilization of freshwater resources, (3) improvement of environmental management capacity of officials of the Ministry of Natural Environment and Tourism and environment inspectors, (4) eco-tourism development through training of rangers and guides, and management of tour agents, enlightenment of tourists through dissemination of information on nature conservation activities.

However, it was difficult to judge the justification of the Project since (1) maturity of eco-tourism was unclear though the request aimed at eco-tourism development, and (2) long term vision and implementation structure of the Mongolian side is unclear. Thus, the Ministry of Foreign Affairs of Japan

dispatched a study team, to organize framework of the Project, and confirmed the change to the title of the Project to “The Project for Construction of The Center for Management of Eco-System of Freshwater Resources and Nature Conservation”.

After the process mentioned above, basic design study teams from August to September 2009 (phase 1) , from October to November 2009 (phase 2), and a draft basic design team in March 2010 were dispatched to Mongolia.

2. Result of Implementation Review Study and the Contents of the Project

Preceded by the studies and discussions above, the Government of Japan decided to conduct an implementation review study. Japan International Cooperation Agency (JICA) then dispatched an implementation review study team to Mongolia from November 22 to December 5, 2009 for field survey and discussions with the Mongolian side. As a result, the title of the Project was agreed as “the Project for Construction of The Center for Freshwater Resources and Nature Conservation”.

After analysis of the survey results in Japan, preparation of plans, and the explanation of the Draft Report of the Implementation Review Study in Mongolia, the Implementation Review Study Report was finalized. The implementation review of the project was prepared according to the following policies.

(1) Scope of the Project

In preparing the scope of the cooperation, the building work and equipment work were designed so as not to duplicate existing facilities and equipment of the Ministry of Natural Environment and Tourism (hereinafter referred to as MNET) and to be in line with the activities the New Center is expected to fulfill. The following scope has been set for the building and equipment work of the project.

1) Training Department: training room, environmental information training room, NGO project support room, data room
2) Exhibition Department: permanent exhibition room, audiovisual hall (auditorium), program exhibition space, outdoor exhibition space
3) Publication & Educational Material Preparation Department: photo shoot booth, recording booth, document store
4) Information Department: natural environment information center cum reference room, librarian room, library, teaching material storage, server room
5) Research Support Department: training lab., freshwater eco-system management room
6) Entrance Hall: reception/information, environmentally friendly material shop, cafe, lounge, and others
7) Management Department: office, meeting room, engineers’ room, experts’ room, lecturers’ room, guard/control room
8) Common: hallway, machine room, etc.

(2) Design Policy

Since the site is within the Special Protected Areas of Bogdo Khan National Park, the building layout and appearance of the building should be made so as not to spoil the scenery of the park. Considering the severe cold climate, special attention is to be paid to thermal insulation to maintain constant interior temperature. Aiming at becoming a model building for energy conservation technology, environmental building technology, which is adaptable in Mongolia to be used and lowering building operation and maintenance cost and prevention of building deterioration measure are to be incorporated into the design. In addition, since the foundation in Mongolia shall be set under frozen earth level enabling a multi-story building to be constructed for minimizing the environment impact and lowering construction costs, it was better to design it as a four story structure. With regard to the actual size of each room, it has been determined by taking into consideration consistency with the training plan and exhibition plan, flow of a large number of student groups (assumed number: equivalent to maximum three classes or 110 people), required area of each room by placing corresponding furniture and equipment in the room, and necessary widths of passages and entrances.

In equipment planning, selection of equipment is limited to the ones for [1] study & training, [2] education & propagation, [3] research and study on the activities for No. [1] & [2] and the ones that are easily maintainable and economical. The requested equipment for aquafarming, environmental observation and lodging are excluded, because it is necessary to examine the operation method and low relevance of these activities to the project. The equipment of the following functions has been selected for the project.

- Equipment for Training
- Equipment for Education and Dissemination
- Exhibition and equipment for fresh water ecosystem
- Equipment for survey practice

The Technical Assistance Plan by the Consultant will be carried out aiming for a smooth commencement of the activities and sustainable management of the New Center with emphasis on the following fields:

- Exhibition Activities Support
- Training and PR Activities Support
- Operation and Management Activities Support

Summary of the building plan, equipment plan and technical assistance by the consultant are shown in the table 2, 3, and 4 respectively.

Table 1 Building Plan

Dept.	Facility Name	Function and Usage
Training (1F /2F)	Multi-purpose Hall cum AV hall, program exhibition room, and seminar rooms	・ Suitable for seminars using multi-media materials as well as training for the public, ・ Seminars held by donors and foreign NGOs ・ Can be used for international conferences on environmental issues ・ Can be used as the program exhibition room by storing away chairs ・ 108 seats
	Seminar Room (1), (2) cum Ranger Training Room	・ Training for MNET and related organizations' officials and practical drills for rangers ・ Can be used as one 75-seat room or two 36-seat rooms by using sliding wall
	Seminar Room (3)	・ Used for a small group training/seminar of maximum 12 people ・ Used as a small group discussion or study room during a training session
	Computer Lab. cum Environmental Map Preparation Room	・ Capacity: 10 persons + one lecturer ・ Mainly used for training of local officials who are involved in environmental research ・ Used for operations training of map data procession software and environmental information management software ・ Can also be used for making environmental map related materials by using GIS and the like
	Lecturers' Room	・ Shared preparation room used by four lecturers
	Training Equipment Storage	・ Used for storing chairs of the Auditorium for the training room to be of multi-purpose usage such as holding program exhibition
	Teaching Material Storage	・ For the use of storing teaching materials
	Experts' Room	・ A room for short-stay visiting experts who assist in training and other activities of the New Center
	NGO Project Room (1), (2)	・ Workroom for environmental NGOs
Exhibition (1F)	Permanent Exhibition Room (Consists of four departments; ①Mongolian Eco-system Map, ②Steppe Eco-system, ③Forestry Eco-system, ④Freshwater Eco-system)	・ Specifications and details of the room depend on the exhibition program. List of exhibits and exhibition programs must be issued by Mongolia in order to carry out detail design. ・ Exhibits and exhibition panels are to be borne by Mongolian side and exhibition cases, tables and lightings by Japan side.
	Sample Storage cum workshop for preparation of exhibits and specimens	・ Preparation for exhibitions and processing specimens ・ Storing miscellaneous items for exhibition and consumable items such as exhibition panels, display lightings
	Special Storage	・ Storing items that require a controlled environment such as stuffed animal specimens and preserved plants ・ Providing minimum required size for storing exhibit replacement but not for storing research purpose specimens
	Exhibition Entrance Hall	・ To exhibit environmental protection activities, overseas cooperation on environmental projects by placing temporary exhibition walls. (assuming to use panels)
	Fumigation Room	・ To fumigate plants and stuffed animals
	Lounge/Anteroom	・ Lounge for exhibition area sharing functions such as exhibits delivery route, passage to outdoor exhibition area and emergency exit
	Exterior Exhibition Space	・ Outdoor paved area, also used for Ranger's outdoor training ・ Exhibits to be provided by Mongolia
Natural Environment Information Center (2F)	Information Center	・ Library, Video/PC Corner, Librarian's counter ・ Reading area for printed information ・ Viewing video library; videos, CDs, DVDs, and visual training record, etc. ・ Computer for information searching

Dept.	Facility Name	Function and Usage
	Equipment Storage cum librarian's office	・ Install a server to store publicity material, educational material data, recorded videos of training being carried out.
	Archive	・ Store PR and educational materials as well as published materials.
PR Data / Teaching Material Preparation (3F)	Media Lab.	・ Simple publishing and AV material preparation takes place, e.g. from data collection, editing, printing to simple bookbinding. ・ High grade printing will be outsourced.
	Photo Booth	・ Photo booth for small sample photo shootings only will be provided
	Recording Booth	・ Soundproofing booth for narration recording for video editing will be provided but not a broadcasting studio.
	Storage (Data) cum General Storage & Book Storeroom	・ A general storage cum book storage to store data
Freshwater Ecology Management (1F)	Freshwater Management Room	・ A backup exhibition aquarium and relevant equipment are to be installed with a direct access to the Freshwater Ecology Exhibition room. ・ Store relevant breeding equipment for exhibition.
	Anteroom	・ To be used as a carrying-in route of live fish.
	Storage	・ To store work tools
Open Lab. (3F)	Open Lab.	・ Train Rangers and NGO staff for environmental research
	Resource Room	・ Store expensive equipment
	Measurement Room	・ Provided for use of precision measuring devices
Administration	Garage cum Unloading Area	・ Indoor parking space for two official vehicles is provided to prevent damage during winter..
	Office	・ The size of the office is decided based on the organization chart of the Center in the operation and management plan of the Center.
	Storage (Ranger)	・ To store mainly outdoor use equipment such as tents and stretchers.
	Meeting Room	・ One meeting room of 16 seats is planned for research and administration purposes. When necessary, one of the training rooms can also be used for this purpose.
	Reception Office	・ Functions as the guide of the New Center, guide to the protected area, sales of exhibition tickets. Equipped with a P/A system
	Information / Shop /Display	・ Occupies a part of main lobby
	Lounge	
	Office	・ Equipped with a fire alarm panel, relevant alarm panels, and an emergency P/A system
	Machine Rooms	・ A/C machine room, reservoir tank room, substation, generator room, pump room and MDF room
	Server Room	・ Equipped with equipment for a LAN system within the Center
	Unloading Area	
	Stairs, Hallway, Hall, General Storage	
	Toilets, Toilets for Disabled	
	Pantry	
	Garbage Room	
	Storage (Adm)	・ To be used to store facilities maintenance tools and consumables, etc.
	Locker Rooms	・ For the use of staff and trainees
	Boat Storage	・ To be used to store rubber boats
Outdoor Facilities	Visitors Parking	
	Staff Parking	
	Vestibule	

Table 2 Major equipment

Group	Equipment	Usage	Quantity
Study & Training	Rubber boat	For monitoring and observation in river and lake	1
	Wireless radios	For communication and liaison among rangers	1 set
	Echo finder	For measuring of fish shoal, water depth, and topography of river and lake bottom	1
	Draft Chamber	For prevention of contamination of hazardous gas and exhaust from volatile substance	1
	Autoclave	For sterilization of experiment equipment	1
	Laptop computer	For projector operation	3
	Desktop computer	For computer training	18
	DVD edit system	For edit and production of DVD image	1
Education & Dissemination	Plastic tank	For transportation of caught live fish for exhibition	1
	Water circulation aquarium	For exhibition of live fish (endangered species)	1
	Water circulation aquarium	For exhibition of live fish (precious protective species)	1
	Water circulation aquarium	For exhibition of live fish (large fish)	3
	Water circulation aquarium	For exhibition of live fish (middle and small fish)	1
	Water circulation aquarium	For exhibition of live fish (Crustacean etc.)	1
	Simultaneous interpreter system	For international conference	1 set
	Video conference set	For conference with remote places and image run	1 set
	Digital printer	For printing reference data and pamphlet	1
	Copier machine	For copying and distribution of related data	2
Common	Chair with small table	For trainee	108
	A set of equipment for computer network	For establishment of network in the building	1 set

Table 3 Technical Assistance by the Consultant

(1) Confirmation of Objectives, Results and Performances

Contents	Objectives	Result	Performance Indicator
(1) Exhibition Activities Support	・ Support planning exhibitions by the Mongolian side ・Execution of exhibitions for effective propagation ・Promote and securement of certain number of visitors ・Exhibit management	・The exhibits and stored items for permanent exhibition facility are confirmed	・Exhibition plan ・Number of visitors to the exhibitions
(2) Training and Enlightenment Activities Support	・Promote efficiency in training and PR activities .	・Inventory of A/V material is prepared. ・Schedule of showing A/V materials is prepared. ・ Production plan of AV materials for training is prepared.	・Showing PR movies ・Production record of AV materials
(3) Operation and Management Activities Support	・Healthy operation of the center ・Planning of activities program	・Drafting plans of annual special activities programs ・Support of freshwater eco-system management	・Number of visitors ・ Freshwater eco-system management record

(2) Manning Plan

Overall plan

Regarding the timing of implementation, in order to have the inputs in the most effective timing, it is planned that there will be two dispatches in the beginning, 1. Exhibition activities support, and at the end, 2. Training and PR activities support, and 3. Operation and management activities support, of the overall project schedule.

1. Exhibition activities support (The 1st Dispatch)
   In order to reflect the exhibition plan to the detail design, it will be implemented as soon as the E/N and G/A take place.

2. Training and PR activities support (The 2nd Dispatch)
   Aiming at smooth operation of the New Center after its opening, it will be implemented right after the completion.

3. Operation and management activities support. (The 2nd Dispatch)
   Operation and management activities support of facilities and equipment will be implemented after completion of the support 2. and before the opening of the New Center.

1) Breakdown and Term

Exhibition, Training & PR Planning/Operation/Maintenance: 1 person

The ranking of the personnel will be decided after taking into consideration expertise required as previously described in the scope, be well aware of policy on natural environmental administration, possesses broad knowledge of eco-system, exhibition and operation. As for the period, the minimum number of days required to prepare the report and set period for preparation and conclusion before and after the field operations.

Duty	Rank	Memo	Term		M/M			
			2010	2012	2010		2012	
					LocalTotal	Japan Total	Local Total	Japan Total
Training, Exhibitionn Plan/Operation & Management	3	1st Assignment	(3) (22) (4)		17	3	5	4
Training, Exhibitionn Plan/Operation & Management	3	2nd Assignment		(3) (36) (4)	16	3	20	4

3. Implementing Agency

According to the reorganization of Ministries decided in September 2008, the implementing agency of the project, the Ministry of Nature and Environment, became part of the Ministry of Road, Transport and Tourism and became the Ministry of Nature, Environment and Tourism. The new implementing agency of the project, therefore, is the Ministry of Nature, Environment and Tourism. The implementing body consists of the working group headed by Director, Department of Public Administration and members also appointed by the Minister.

The number of staff for the operation, maintenance and management organization of the Center is planned to be 35, of which 24 are from MNET and 11 will be newly recruited. The activities to take place in the New Center are all currently being conducted except for feeding/breeding for the live fish exhibition. Therefore it can be operated with the current technical level without any difficulties.
Estimated budget to ensure operation and maintenance of the New Center, which includes the salaries of the staff, cost for purchasing and repairing equipment, and utility costs, by MNET is 189.6 million Tg.

The 2010 fiscal budget of MNET was 26,743.3 a million Tg. Therefore, it is judged that there will be no problem to secure the expected operation and maintenance cost for the New Center and MNET will be able to sufficiently support the cost. In addition, there is an additional plan of the self generated income to be added.

4. Schedule and Estimated Project Cost

Estimated project cost to be born by the Mongolian side is Tg. 105.1 million.

The project will require a total of 21.0 months for completion (Detail design: 8.0 months, building construction and equipment procurement: 13 months) after the notes for the project are exchanged by the two governments.

5. Validity of the Project

This project is deemed valid to implement under Japan's grant aid cooperation for the reasons below.

- It becomes possible to newly train a total of approx. 2,000 officials and staff of MNET, RAs, rangers and volunteer rangers per year in natural environment conservation activities in the New Center.
- It becomes possible to educate and disseminate information about natural environment conservation activities to a total of approx. 25,000 members of the public and foreign tourists per year.
- The scheduled activities in the New Center do not require advanced technology and the existing technical level, personnel and scheduled budget are sufficient to implement the project. In addition, sustainable operation is deemed to be possible because rental of the facilities and

admission fees to the exhibition rooms can be used for operation and maintenance.

- This project contributes to realization of the objectives prescribed in “Mongolian Action Programme for the 21st Century, 1998”, the national policy of Mongolia on nature conservation and international treaty.

As stated above, it is expected that this project will have many advantageous effects as well as benefit the nature conservation of Mongolia. Therefore the validity of implementing Japan’s grant aid cooperation to a part of the project is confirmed. In addition, in order to make the project further effective and efficient, it is essential to coordinate activities with the international organizations and NGOs, which are active in the field of natural environment conservation within Mongolia and to continuously receive support for operation of the New Center by the government of Mongolia.

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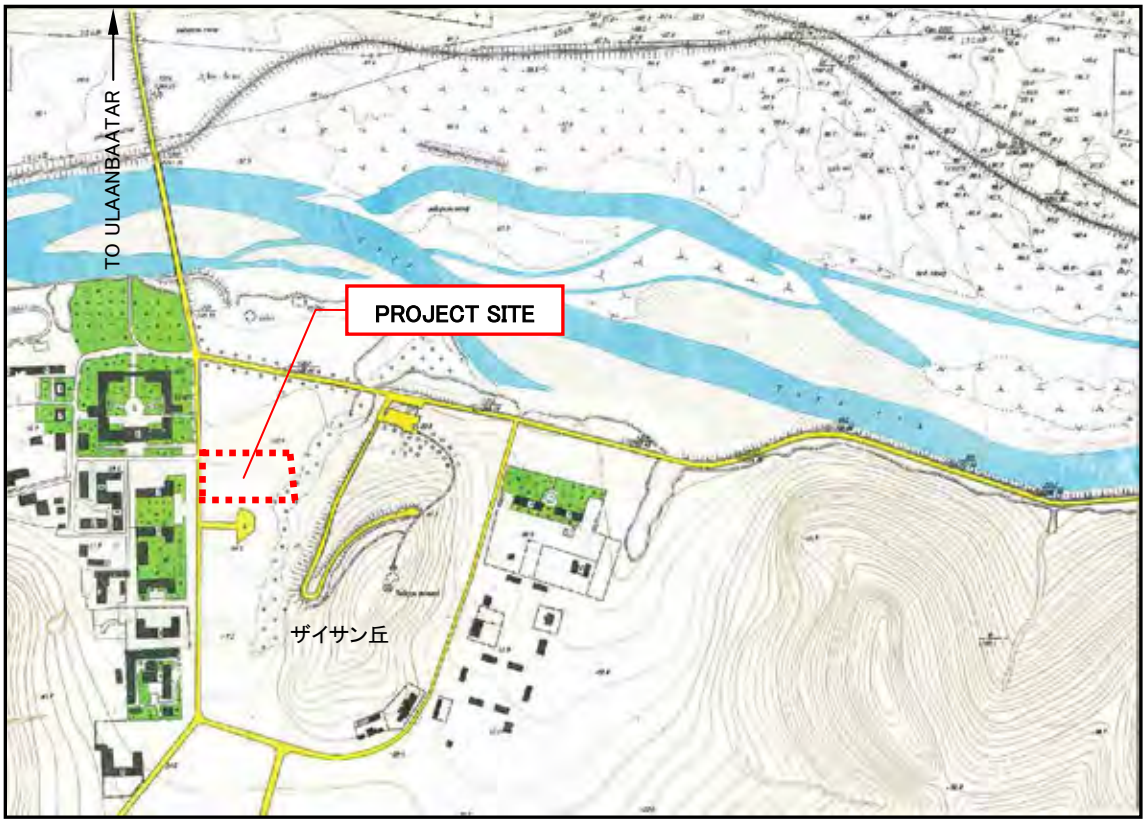
Location Map

MAP OF MONGOLIA



SITE MAP

Perspective

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Abbreviations

ADOBE	Adobe Systems Incorporated
AV	Audio Visual
AVR	Auto Voltage Regulator
CIDA	Canadian International Development Agency
CPU	Central Processing Unit
DVD	Digital Versatile Disk
EC	European Community
EIA	Environmental Impact Assecement
E/N	Exchange of Notes
EU	Europian Union
FAO	Food and Agriculture Organization
G/A	Grant Agreement
GB	Giga Byte
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHz	Giga Hertz
GIS	Geographic Information System
GPS	Global Positioning System
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit
Hz	Hertz
JICA	Japan International Cooperation Agency
JIS	Japanese Industrial Standard
IEE	Initial Environmental Examination
IFC	International Finance Corporation
ISO	International Organization for Standardization
IT	Information Technology
kPa	Kilo pascal
LAN	Local Area Network

lux	Lux
M	Magnitude
MDF	Main Distribution Frame
MNET	Ministry of Nurture, Environment and Tourism
MNE	Ministry of Nurture and Environment
ODA	Official Development Assistance
NGO	Non-Governmental Organizations
NPO	Non-Profit Organization
OECD	Organization for Economic Cooperation and Development
OJT	On-the-job training
OS	Operation System
PA	Protected Area
PBX	Private Branch Exchange
PC	Personal Computer
RS	Remote Sensing
SPA	Special Protected Area
Tg	Tugrik
UB	Ulaanbaatar
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
VAT	Value Added Tax
VCD	Video Compact Desk
WWF	World Wide Fund for Nature

Chapter 1. Background of the Project

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Mongolia is a landlocked country in the highlands of Central Asia with a population of approx. 274 million (2010 estimate) and about 1,567,000 km^2 land area. Its GDP is $ 1,880 million and GDP per capita is 1,288 Dollar (2007). The main industry of the country is agriculture and stock farming, however, because of its biodiversity including having rear wildlife in the world, the importance of tourism industry is growing year by year and it is now 10% of GDP.

However, during the market-oriented economic reform since 1990s, the traditional nomadic life, which is compatible with resource use and environmental protection, collapsed and unregulated development took place. As a result, environmental issues such as decline in number of rare species and endangered species, soil contamination and water pollution due to the drainage from facilities for tourists, and air pollution from heating fuel consumption, have been developed.

Under these circumstances, Mongolia is actively participating in the framework of an international nature conservation such as Biodiversity Treaty (1992), International Convention to Combat Desertification (1994) and showing the position to focus on environmental conservation by declaring "Promotion of balanced and sustainable regional/local development" in its national plan "Economic Growth and Strategy for Poverty Reduction" (EGSPR). However, establishment of nature conservation system has been delayed owing to lack of environmental protection legislation, vulnerable administrative and implementation system, lack of appropriate techniques for using natural resources, lack of conservation technology of rare wild animals and plants, lack of scientific data such as number of individual habitats and so on.

The total of protected area (PA) is 25,000,000 ha which occupies one seventh of the total territory of Mongolia. Approx. 40% of the PA consists of the lakes and rivers where environmental destruction is rapidly taking place due to pollution caused by mining development and the like. Because of the situation, it is an urgent matter to establish environmental conservation measures for management of freshwater ecosystem inhabit in the areas. In addition, there is currently no base for managing the nature conservation activities for endangered animals and plants that are affected be the unregulated development.

In this context, the Government of Mongolia requested to the Government of Japan regarding the Grant Aid project for the establishment of "Biodiversity Conservation Center" as a center for (1) environmental education of economy development and nature conservation, (2) research of animal/plants and survey for effective utilization of freshwater resources, (3) capacity building of environment management for official of the Ministry of Nurture and Environment, (4) eco-tourism development through training of ranger and guide, and management of tour agent, enlightenment of tourists through dissemination of information on nature conservation activities.

However, it was difficult to judge the justification of the Project since (1) maturity of eco-tourism was unclear though the request aimed at eco-tourism development, (2) long term vision and implementation

structure of the Mongolian side is unclear. Thus, the Ministry of Foreign Affairs of Japan dispatched study team, organized framework of the Project, and confirmed the change the title of Project as “the Project for Construction of The Center for Management of Eco-System of Freshwater Resources and Nature Conservation”.

After the process mentioned above, basic design study teams from August to September 2009 (phase 1) and from October to November 2009 (phase 2), and a draft basic design team in March 2010, furthermore an implementation review study team were continuously dispatched to Mongolia from November to December 2010. As a result, the title of the Project was agreed as “the Project for Construction of The Center for Freshwater Resources and Nature Conservation”.

1-1 Natural Conditions

The climate of Ulaanbaatar is a typical continental climate as summer rain is minimal and in winter, it is dry and cold. The average temperature is below zero for half the year. In that period (typically 1 October ~ 5 January), heating hot water supply from heating stations is necessary. The life cycle of buildings is relatively short due to the harsh conditions resulting from large fluctuations in yearly and daily temperatures.

Rain is concentrated in the summer however, rainfall is minimal. Localized heavy rain and flood often occurs. Although wind is affected by terrain figure at various places, in many cases, winter winds enter from east from the Ulaanbaatar basin. Record of past participants in the highest temperature 36. 7 ° c (1997 July), minimum temperature 49.0 ° (December 1954), the maximum daily rainfall 75 mm (1967 June), and maximum wind speed 40 m / s.

Table 1-1 Weather Conditions in Ulaanbaatar

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DIC	YEAR
Monthly Mean Max. Temperature(℃)	−7. 3	−1. 0	9. 9	20. 1	27. 9	30. 4	30. 9	29. 3	25. 0	18. 4	5. 9	−4. 9	−7. 3
Monthly Mean Min. Temperature (℃)	−33. 2	−30. 1	−23. 7	−14. 3	−6. 3	1. 3	5. 3	3. 2	−5. 1	−14. 9	−25. 1	−31. 5	−33. 2
Mean Precipitation(mm)	2. 0	2. 0	3. 3	8. 4	13. 4	50. 9	65. 7	76. 3	32. 1	8. 3	4. 9	3. 2	2. 0
Mean No. of Rainy Days	4. 1	2. 9	3. 8	5. 1	5. 8	11. 9	15. 6	14. 3	7. 9	4. 7	5. 1	5. 5	4. 1

1-2 Consideration of Social Environment

Since the project site is located within the Bogdo Khan Protected Area. The Ministry of Nature, Environment and Tourism (MNET) conducted IEE under the laws and regulations related to environment and eventually obtained the approval in March 2009. All items were confirmed that they were able to be dealt with by Mongolian side.

The result of IEE is as follows.

Table 1-2 IEE Result

Necessary conditions for implementation of the Project

Item	Term	Re-marks
1. Observe proper use of water resource. Follow the procedures of potable water and water for construction and make the payment within the period. －Treat the garbage. Take the technical conditions and make the contract with related authorities －Pay attentions to water leakage from joint of water pipes due to external and internal influence	During operation	
2. Install garbage cans during and after construction of the building. Dispose the garbage periodically making contract of transport service company in the area.	Each month	
3. Plant trees in the project site with advice of specialized company. The planting shall be in accordance with the Urban Plan lows	After opening	
4. Take technical conditions from the public health department and the fire station and observe them	After opening	
5. Install firefighting facilities and train the staff. Install fire warning sign board	After opening	
6. Control the number of concentrated visitor's vehicles, install car parks in proper place. Pave it as protection from soil contamination	After opening	
8. Make and submit report of nature conservation activities carried out to the Bogd-Khan Special Protected Area Office	Each year	
9. Coordinate with MNET, Health Department, Construction and related authorities for observance of nature conservation related lows etc.	After opening	
10. Apply IEE each time at the event of activity or the capacity of the building to be changed or expanded or re-developed or replaced	Each occasion	

(See Appendix-9. IEE Notice)

Chapter 2. Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

(1) Scope of the Assistance

The following principal functions of the project have been confirmed through discussions held between the team and Mongolian side. The scope of the project has been determined so that the function of the project are in conformity with the activities the New Center is expected to fulfill and there will be no redundancy with other existing facilities and equipment of the Ministry of Nature, Environment and Tourism.

1) Training Department: training room, environmental information training room, NGO project support room, data room

2) Exhibition Department: permanent exhibition room, audiovisual hall (Auditorium), program exhibition space, outdoor exhibition space

3) Publication & Educational Material Preparation Department: photo shoot booth, recording booth, document store

4) Data department: natural environment information center cum reference room, librarian room, library, teaching material storage, server room

5) Research Support Department: training lab., freshwater eco-system management room

6) Entrance Hall: reception/information, environmentally friendly material shop, kitchen, lounge, and others

7) Management Department: office, meeting room, engineers' room, experts' room, lecturers' room, guard/control room

8) Common: hallway, machine room, etc.

(2) Functions and Required Facilities of the New Center

1) Training Department

- Outline of Training Activities

Planned activities of the New Center are roughly divided into the following four corresponding to the trainees and programs.

- Training for MNET and related government agencies' officials

- Training for rangers, volunteer rangers and PA staff
- Training for NGO staff and volunteers
- Seminar for the general public and local residents by NGOs and donor organizations

The patterns of these training activities will be lectures, practical training, training on computer software on natural environment, etc. depending on the contents and trainees.

- Training for MNET and related government officials

Training of officers of MNET and relevant organizations is currently carried out using facilities such as hotels and tourist camps near Ulaanbaatar due to a lack of training facilities in the city. As a result, there is a significant constraint of limiting the number of activities and the increased burden of renting facilities.

Also, to secure a training venue, a venue reserved for training of a similar theme by donor countries may be used to hold training by MNET, in particular, a chronic shortage of training venues in Ulaanbaatar has become an issue

Lack of places for education and training of the officials has led to lack of appropriate environmental legislation and management and implementation structure including human resources fragile. Therefore, improvement of the situation is urgently needed.

The following are some of the actual training carried out for MNET and related government officials in 2009.

Table 2-1 Training Record for Staff of MNET and Relevant Government Officials in 2009

（Training to be continued in the New Center）

№	Purspose	Traning Contents	Implementing Organization	Duration (day)	No. Of particip ants
1	Annual training for MNET Staff in Provinces and Capital	Land, underground, it's wealth utilization, restoration, Strictly Protected Area, Influences on Nature and environment, it's estimation	MNET of provinces, SPAAO administration staff	1	45
2	Annual training for MNET Staff in Provinces and Capital	Water resources utilization, protection, NGO relevant works, research and studies	MNET of provinces, SPAAO administration staff	1	45
3	Annual training for MNET Staff in Provinces and Capital	Nature and environment sector policy, forest, plant; desertization, providing administration for sumas, supervising issues	MNET of provinces, SPAAO administration staff	1	45
4	Annual training for MNET Staff in Provinces and Capital	Biological species, information database, training and advertisement	MNET of provinces, SPAAO administration staff	1	45
5	Annual training	Air, rubbish and pollution, poisonous chemicals, natural disasters, human resources local tasks	MNET of provinces, SPAAO administration staff	1	45
6	Annual training for MNET Staff in Provinces and Capital	Tourism issues	MNET of provinces, SPAAO administration staff	1	45
7	Annual training for MNET Staff in Provinces and Capital	Training of Development policy departments Provinces' Governor Office	MNET of provinces	1	22
8	Annual trainings	Co-Partnership trainers	MNET of provinces	1	22
9	Accredited in Water related engineering - certification training	Annual planned training with the approved training program and cooperation of UNNMSST	Water agency and UNNMSST(Ulsiin niisleliin negdsen medeelel surgalt surtalchilgaanii tov), MNET	21	38
10	"Certified Qualification in Drilling" - training Basic Drilling skills - training	Training program, accredited by M.U.S.T – www.must.edu.mn and DGS training center	Water agency, M.U.S.T(Mongolian university of science and technology) – DGS training center	14	59
11	"Mongolian hydro geology, engineer geology, geo-ecology issues" training		M.U.S.T – Geology, petroleum school, Hydrogeology, geo-ecology professors' team	1	300
12	"Water-the development key" training and academic research conference	Specialized program cooperated with Universities	MNU(MONGOLIAN NATIONAL UNIVERSITY), MUA (Mongolian University of Agriculture), M.U.S.T, MNPU(Mongolian National Pedagogical University), MMSTU(Mongolian Medical Science and Technology University), Eco-Asia Institute On World's water day	1	160
13	Water usage and measurement – training seminar	On "World Measurement day"	Water agency Cooperated with standardization, Measurement Organization	1	450
14	Mongolian economy influences on water related area due to the financial crisis, initiated in USA and the relevant actions against the issues - seminar		Water agency and Mongolia-Japan Center, MNU, YESBHB-BZU program	1	50
15	" Auditing Nature and Environment"- specialized training and seminars		Water agency and MUBOZB Project, Mongol Chamber, SHUTuv, Eco-Asia Institute	3	60
16	"Removing and preventing rust, residue or scum-Improving water quality"-training and seminars	Mongolian Government Activities	Program officers and "Tot Com Service" Co. Ltd cooperated	1	250
17	"Water measuring implementation" meeting and seminars	"About water" law implementation	cooperated with MCS International and "Intensive technology Center"	1	:136
18	Nature and Environment Monitoring, experimenting	Air pollution monitoring, modern trend, direct and indirect influences on air pollution	Weather agency		20

№	Purspose	Traning Contents	Implementing Organization	Duration (day)	No. Of particip ants
	laboratory, supervising staff				
19	Weather prediction and forecast division staff	Methodology to use Doppler radar to predict short term weather forecast, predict the natural disaster using satellite, technical methods of analysis	Weather prediction and forecast division staff		25
20	Weather prediction and forecast division staff	Weather prognosis with numbering, climate change prognosis	Weather prediction and forecast division staff		25
21	National network of Weather and Forecast, Environmental monitoring and examining staff	pasturage, desertification monitoring	Weather and forecast researchers		30

(Source: The Ministry of Nature, Environment and Tourism)

- Training for rangers and PA staff

Establishment of a training system is urgently required because the burden on the natural environment is increasing while lack of practical training facilities for environmental studies and research is resulting in inadequacy of conservation technology for rare wild animals and plants, and scientific survey/research data management on the inhabiting population of them.

Training of new rangers is entrusted to National University of Agriculture from MNET and training of the in-service rangers is carried out by MNET. In the past year, for example, technical knowledge/skill training for all 210 regular rangers from each district was carried out obtaining cooperation of the Special Protected Area Administration Office, National University of Agriculture and NGO and 80% of the rangers took the course.

Moreover, training of new rangers was also carried out over the three fiscal years, 2002, 2003, and 2004 with 267 persons graduating from the training course for new ranger development.

The Ranger training is a two year full-time course (90 credits), and tuition is paid by MNET. Because the Agricultural University does not have the relevant equipment for ranger education, some training takes place in associated institutions in Ulaanbaatar.

It is mandatory for a ranger to work in a local region for one year after graduation. After a year of work experience, a ranger can qualify for admission to university and obtain a bachelor's degree.
As for PA staff, because digitalization of information handling was institutionalized in 2008 in order to increase efficiency in the PA offices throughout the country (460 total personnel), which came in to effect from 2009, while the means of communication with other staff has been limited to audio transmission by telephone, training for the use of computers is urgently required.

Actual training for rangers and PA staff conducted in the past year is as follows

Table 2-2 Training Record for Rangers and PA Staff in 2009

（Training to be continued in the New Center）

№	Purspose	Traning Contents	Implementing Organization	Duration (day)	No. Of participants
1	Enhancing the utilization of Nature and Environment law and regulations	Nature and Environment law and regulations utilization, training with cooperation of Specialized Monitoring Organizations	Forest Agency and World Wide Fund for Nature, WWF's host organization in Mongolia	1	44
2	Advancing the knowledge about Forest planting, forestation, forest restoration	Presentation "Current activities of Forest planting, forestation, forest restoration and future action plan". Discussion and Mission planning	Forest Agency and MNET	1	50
3	Improving Forest law and regulation obedience	"Forest law and regulation obedience" discussion in some provinces – Khentii, Uvs, Arkhangai, Selenge. Discussion about "Forestation, Forest restoration, tree plantation agency's current activities".	Forest Agency, Germany cooperation Association	90	47
4	Capacity building of MNET Staff	MNET staff training and discussion	Forest Agency and MNET	2	52
5	Advancing the Law and Regulation knowledge	Training with Law and Regulation agencies	Forest Agency and City Police Department, Road Supervising Authority, CSHA, BZD District Attorney	1	52
6	Improving Bush Fire prevention and emergency case actions	"Bush Fire prevention and Action plan of emergency case" – Action training	CFBA(Capital Fire Battle Agency), Chingeltei, Sukhbaatar, Songinokhairkhan districts Forest Agents	1	50
7	Advancing the financial knowledge of Staff	Training about share, bond and basic calculation and accounting of them	MNET agencies in Provinces, stock dealers and accountants	1	50
8	Activating the obedience of forest law and regulations	"Activating the obedience of forest law and regulations" discussion among Khangai area provinces	Forest agency, funded by "GTHAN" In Arkhangai province Tsetserleg town	2	65
9	Activating the obedience of forest law and regulations	"Activating the obedience of forest law and regulations" discussion among Central area provinces	Forest agency, funded by "GTHAN" In Selenge province, Mandal suma	2	45
10	Activating the obedience of forest law and regulations	"Activating the obedience of forest law and regulations" discussion among Western provinces	Forest agency with State fund In Uvs province Khyargas suma	2	56
11	Activating the obedience of forest law and regulations	"Activating the obedience of forest law and regulations" discussion among Eastern provinces	Forest agency with State fund In Khentii province Dadal suma	2	49
12	Knowledge enhancement about tree lumbering	"Separating the tree lumbering spot" training / Khangai area provinces /	Forest agency, funded by "GTHAN" In Tuv province Batsumber suma	1	20
13	Harmful forest insects, caused illness and proposing actions	Current issues of Harmful forest insects, caused illness and proposing actions against these issues- discussion	Forest agency and MNET	1	1

(Source: The Ministry of Nature, Environment and Tourism)

- Training for NGO staff and volunteers

In 1997, the Mongolian NGO Law was enacted. This provided NGOs related to environmental activities a legal basis and made it possible for people-driven activities in many fields. Relevant regulations to enforce the Law were also quickly enacted in February 1997 in order to promote regimentation of NGOs. As a result, there have been many NGO's established in the central and local regions since February 1997. NGOs those are currently organized are important partners of the local

wildlife and nature conservation.

MNET is supporting the activities by these NGOs under the policy of promoting residents-led development and residents associations (Friendship). Currently 308 environmental NGOs are registered with MNET and 80% of them are carrying out seminars and training on environmental conservation.

Number of NGOs according to activities in different sectors is as follows.

Table 2-3 Number of NGOs in Each Sector in 2009

Sector	Forest	Forest fauna and flora	Forest fauna	Forest flora	Fauna Animal	Flora Plant	Soil Amendment	Water	Unknown	Total
Qnty.	134	1	2	1	7	16	6	119	22	308

Table 2-4 Training Record for NGO Staff and Volunteers in 2009

(Training to be continued in the New Center)

№	Purpose	Traiing Contents	Implementing Organization	Duration (day)	No of participants
1	Promotion of information sharing, transmission, propagation & education, and research among the environmental NGOs, governmental bodies and research institutions of Mongolia	Under the theme of "Mongolian Environment" such issues as , water resource, forest issues, air, soil, water pollution, combating desertification, present status of green belt project, etc., were discussed, information shared, and propagated.	Mongolia Eco Forum (NPO) MNE, Institute of Ecology, Univ. of Science and Technology	3	200
2	Special Tour Guide Training	Special Tour Guide Training	MNET	5	40
3	Securing Tourists' Safety	Securing Tourists' Safety training	MNET	5	80
4	Information sharing and cooperation among Environmental NGOs	Environmental NGO national forum	MNET	3	450
5	Annual event - National Conference	Non Government Organizations state 2nd conference T	-	1	400

(Source: The Ministry of Nature, Environment and Tourism)

- Seminar for the general public and residents by NGOs and donor organizations

In Mongolia, implementation of environmental education activities to the public, local residents and private groups are entrusted to the above mentioned environmental NGOs. Most of the environmental NGOs in Mongolia are small with few members and do not have a base such as facilities and equipment. Many of them receive financial support from MNET and other donors for carrying out their activities. MNET is expecting to use the New Center and equipment provided under this project as the base for supporting and coordinating the NGOs activities thereby making the best use of the subsidies to them. As demonstrated in such activities as the seminar conducted by the NGOs for local residents with the support of the World Wildlife Fund and GTZ in 2007, environmental conservation activities of the NGOs are essential and it is unlikely to effectively disseminate the concept to the public without capacity building of NGOs. Therefore the importance of training the NGOs and local volunteers is

very high.

At present, the following environmental issues are pointed out by the above mentioned NGOs in Mongolia.

- Increase of impact on natural resources because of increase in mining development and profit-driven tourism due to economic deregulation.
- Increase of unauthorized hunting and fishing by individuals
- Damage to plants and animals by increased traffic of four-wheel-drive vehicles
- Unable to improve regions due to the region's not benefiting from development

Training plans for propagation and education activities to solve these problems is as follows. Educational activities for students are also conducted on an ongoing basis.

Table 2-5 Training Record for Residents and Public in 2009

（Training to be continued in the New Center）

№	Purpose	Training Contents	Implementing Organization	Duration (day)	No. Of Participants
1	Public awareness about gardening, planting and green city	Exhibition "Seedlings, regrowth, plantation sales – 2009", Organized Training about fruit tree plantation, gardening benefit. Also TV shows about tree planting, growing and caring on MTV and other media	Forest Agency	-	400,000+ public
2	National campaign of tree planting for public	"Conventional methods of Tree Planting" Public Campaign, published 6000 brochures, advertisement and distribution of the training materials to campaign participants.	Forest Agency	-	6,000+ public

(Source: The Ministry of Nature, Environment and Tourism)

- Environmental data training

Mapping information management by GIS mapping as a high accuracy positioning data in the field of nature conservation activities is becoming increasingly important. Further, it was institutionalized to digitalize environmental data gathered from 30 points in the 23 districts as well as 21 PA offices in the country in 2008 and was enforced in 2009. Therefore, urgency of implementing the training to the staff is high.

Environmental Information Software training concerning Remote Sensing / Geographical Information System (RS/GIS), which was conducted in 2009, is shown below. Because of the reasons above, the need to strengthen the environmental information training is very high.

Table 2-6 Record of Environmental Information Training in 2009

(Training to be continued in the New Center)

№	Purpose	Training Contents	Implementing Organization	Duration (day)	No. Of Participants
1	Information and telecommunication systems and network	sub information database for weather forecast mode, information processing, space examining software usage	Weather and forecast researchers	10	30
2	Water agency research staff	improving water information processing	Water agency research staff	10	20
3	Information and telecommunication systems and network	information technology	Weather agency	10	20
4	Information and telecommunication systems and network	network security methods (Firewall, SSL etc.)	Weather agency	10	20
5	Information and telecommunication systems and network	(Server virtualization, consolidation and automation)	Weather agency	10	20
6	Information and telecommunication systems and network	(Domain name service, Domain controller)	Weather agency	10	20
7	Information and telecommunication systems and network	/Linux system administration-(Fedora, Redhat)/	Weather agency	10	20
8	Information and telecommunication systems and network	(Web designing)	Weather agency	10	20
9	Information and telecommunication systems and network	(Data storage, RAID system)	Weather agency	10	20
10	Information and telecommunication systems and network	(Maintenance of UPS, LCD monitor, main board etc.)	Weather agency	10	22
11	Remote sensing, GIS	(Use of remote sensing on climate change research)	Weather agency	10	20
12	Remote sensing, GIS	Advanced training on GIS)	Weather agency	10	20
13	Remote sensing, GIS	“Separating the tree lumbering spot” training / Western Central Easter provinces/	Forest agency, funded by “GTHAN”	20	20
14	Remote sensing, GIS	“Developing a forest management plan” training	Forest agency	20	20
15	Remote sensing, GIS	Producing a Report about forest information database	Forest agency	20	20
16	Remote sensing, GIS	Using satellite data for forest counting, Forest organizing work of private entities with forest organizer’s official license	Forest agency with the cooperation of this sort of project teams	20	20

(Source: The Ministry of Nature, Environment and Tourism)

The training in the New Center will be conducted using inexpensive consumer computer whose performance has improved in recent years.

- Summary of New Training Plan

In addition to the above shown trainings, the Mongolian National Tourism Center, which was established in May 2009, is also planning to conduct training in the New Center as below.

Table 2-7 Training by the Mongolian National Tourism Center (Plan)

№	Purpose	Training Contents	Implementing Organization	Duration (day)	No. Of Participants
1	Guide Training Course	Training course of tour guide 4 times a year	Mongolian National Tourism Center	21	25
2	Drivers Training Course	Training course of tour drivers 2 times a year	Mongolian National Tourism Center	5	50
3	Cooks Training Course	Training course of cooks for the tourist 2 times a year	Mongolian National Tourism Center	5	30
4	Police Training Course	Training course of policemen who can attend the foreign tourist 2 times a year	Mongolian National Tourism Center	90	60
5	Hotel Management & Marketing Training Course	Training course of hotel managers 2 times a year	Mongolian National Tourism Center	2	60
6	Hotel Receptions Training Course	Training course of hotel receptionists 4 times a year	Mongolian National Tourism Center	14	80
7	Visit to Aimags and Training Course of NP's securities	Training course of tour guide 4 times a year	Mongolian National Tourism Center	2	60
8	Ger Camp's managers marketing & management Training Course	Training course of Ger camp managers 2 times a year	Mongolian National Tourism Center	2	40

(Source: The Ministry of Nature, Environment and Tourism)

In addition to the existing training plan described above, new training plan shown in the Table 2-8 "New Training Schedule by Size" is planned to be implemented in the New Center for officials of MNET and related governmental agencies, NGOs, and the public.

Of these, "Environment Seminars for the public by NGO" by NGO were conducted for 30 to 120 people (average approx. 80 people) and 50 organizations for two days biannually. However there is no record of them since they were outsourced by MNET and assumed numbers are indicated.

Number of days for showing films regarding "Environmental Awareness, Public Relations and so on" is scheduled for two hours daily and thus calculated as 0.2.

Table 2-8 New Training Schedule by Size in 2009

New Training Schedule by Size (Officials・Rangers・NGOs・the Public)

Training Category	Size (No. of People)	Description	No. of Days (A)	Times/Yr (B)	Total No. of Operating Days	No. of Days Facil. Used (X=AxB)
General Training	a. ～12	**[Small Training Room]**			153	Training Rm (Small) **153**
		*Ministry officials, related org. officials, and ranger training record	1-60	-	106	
	5	Paid course for the public (every Saturday)	1	47	47	
	b. 13～36	**[Mid-size Training Room (one room)]**			373	Training Rm (Middle) 36 x 2 **437**
		*Ministry officials, related org. officials, and ranger training record	1-30	-	182	
	23	SPA survey method for SPA in-charge officials	5	1	5	
	30	Improvement and application of knowledge in the field of environmental law by Ranger	5	8	40	
	20	Efforts to solve environmental problems for NGOs	1	16	16	
	10	Scientific approach in national policy formulation process	1	7	7	
	25	Guide Training Course	21	1	21	
	25	Drivers Training Course	5	1	5	
	15	Cooks Training Course	5	1	5	
	30	Police Training Course	90	1	90	
	15	Visit to Aimags and Training Course of NP's securities	2	1	2	
	c. 37～72	**[Mid-size Training Room (two rooms)]**			196	(b/2+ c+e)
		*Ministry officials, related org. officials, and ranger training record	1-90	-	155	
	80	Training for tourism operators (80 / 6 times = 500 persons)	1	6	6	
	50	Study of plants and animals and note taking skills by Rangers	3	10	30	
	60	Environmental education for municipality officials	1	5	5	
	d. 73～108	**[Large Training Room]**			331	Training Rm (Large) 108 x **385**
		*Ministry officials, related org. officials, and ranger training record	1-5	-	64	
	-	Environmental Awareness & Publicity Related Movie Showing	0.2	283	57	
	100	Extacurricular movie showing for elementary school, junior high school and senior high school students (100 stutends x 1 day/times/by E,JH, and SH)	1	3	3	
	-	Environmental protection anniversary month events			0	
	-	Wourld Tourism Day (Sept. 27th)	1	1	1	
	* 80	** Environmental seminars for the public by NGOs	2	100	200	
		International Seminar on Environment				
		Special exhibitions, etc.				
	118	Training for staff at the water quality sampling/measuring point (237 participants)	3	2	6	
	e. 109 or more	**[Large Training Room + Two Mid-size Training Rooms]**			54	
		*Ministry officials, related org. officials, and ranger training record	1-10	-	39	
	150	Regional Environment Monitoring Training (5 x 30 Soms /Yr)	5	1	5	
	180	Tourist guide exam	3	1	3	
	500	MONE day	1	4	4	
	1400	Tourism Expo (every spring))	3	1	3	
Laboratory Training	a. ～16	**[Practical Lab.]**			90	Practical Lab. 16 x 1 Rm **312** (a+bx2)
		*Ministry officials, related org. officials, and ranger training record	1-2	-	3	
	10	Regional Environment Monitoring Training (5 x 30 Soms /Yr)	5	3	15	
	10	Training for staff at the water quality sampling/measuring point (237 participants)	3	24	72	
	b. 17 or more	**[Practical Lab. (Twice)]**			111	
		*Ministry officials, related org. officials, and ranger training record	1-15	-	35	
	23	SPA survey method for SPA in-charge officials	5	1	5	
	50	Study of plants and animals and note taking skills by Rangers	3	10	30	
	30	Improvement and application of knowledge in the field of environmental law by Ranger	5	5	25	
	20	Efforts to solve environmental problems for NGOs	1	16	16	
Environmental Information Training	a. ～10	**[Environmental Information Training Center]**				Environmental Info. Training Rm **439**
		*Ministry officials, related org. officials, and ranger training record	1-20	-	229	
	20	Rangers (Total 760), Inspectors (Total 457) : GPS tracking training (400×5 day/Yr)	5	20	100	
	10	Regional Environment Monitoring Training (5 x 30 Soms /Yr)	1	15	15	
	10	Training for staff at the water quality sampling/measuring point (237 persons)	1	15	15	
	30	Information digitalization training for PA management officers (210 persons)	5	7	35	
	30	Information digitalization training for Rangers (210 persons)	5	7	35	
	30	Geographic Information Software Training	10	1	10	

* Implementation record that will continue in the New Center, according to an interview.

** NGOs' training activities involving 30-120 (average around 80) people have been carried out, (50 NGOs x 2 days x twice a year). Since there is no record of them due to the fact that activities were outsourced by MONE, assumed value are used.

The table of "Breakdown of Training Record for Staff of MNET, Relevant Government Officials and Ranger" below shows the number of operation days and seating capacity for each training rooms to conduct in the New Center.

The table shows that medium sized training rooms with numbers of participants from 36 to 120 are better utilized according to records from the last couple of years. The number of training section using computers which are conducted in the Environmental Information Training Room is also expanding significantly.

Table 2-9 Breakdown of Training Record for Staff of MNET, Relevant Government Officials and Ranger

Trainig Record by Each Room			A + B		A. For Staff of MNET, Relevant Government Officials		B. For Renger	
	Room(Capacity)	Year	No. of Participant	No. of Operating day	No. of Participant	No. of Operating day	No. of Participant	No. of Operating day
1	Small Training Room(12)	Before 2009	72	99	50	97	22	2
		2009	73	7	72	6	1	1
		Total	145	106	122	103	23	3
2	Migle Size Training Room(36)	Before 2009	547	148	420	54	127	94
		2009	398	34	378	33	20	1
		Total	945	182	798	87	147	95
3	Midle Size Training Room x 2 (72)	Before 2009	745	32	745	32	-	-
		2009	729	123	169	18	560	105
		Total	1,474	155	914	50	560	105
4	Auditorium(108)	Before 2009	842	52	550	45	292	7
		2009	1,000	12	1,000	12	-	-
		Total	1,842	64	1,550	57	292	7
5	Auditorium + Midle Size Training Room x 2 (180)	Before 2009	3,750	37	3,750	37	-	-
		2009	296	2	296	2	-	-
		Total	4,046	39	4,046	39		
6	Training Lab.(16)	Before 2009	364	65	364	65	-	-
		2009	67	8	67	8	-	-
		Total	431	73	431	73		
7	Environmental Information Training Room(10)	Before 2009	187	49	187	49	-	-
		2009	100	180	100	180	-	-
		Total	287	229	287	229		

* Training record for NGO Staff, Volunteers, Residents and Public is omitted due to its wide range activity to grasp all.

According to the analysis of the aforesaid new training schedule and actual training, operation days, which correspond to the requested size of the facilities and the time apportioned for each of training, have been estimated as follows. This calculation applies only to training activities though staff meetings of the New Center that can also be held in a small training room.

Table 2-10 Number of Operating Days Corresponding to Requested Facility Size

	Size (No. of persons)	No. of Operating day	Net Operation Rate	Corresponding Facility (No. of persons)
1.	～12	153	55% [153/283]	Small Training Room (12) x 1 room
2.	13～36	373	154%	Middle Size Training Room (36) x 1 rooms
	37～72	251	[(373/2+196+54)/283]	Middle Size Training Room (36) x 2 room
3.	73～108	331	117% [331/283]	Auditorium (120) x 1 room
	109 or more	53	19% [54/283]	Large Training Rm. (120) + (Middle Size Training Rm. (36) x 2 rooms]
4.	～16 or more	308	110% [312/283]	Training Lab.
5.	～10 or more	496	155% [439/283]	Environmental Information Training Room

Utilization rate of the training rooms are calculated as follows based on annual operating days of the New Center and the capacity of each training room.

Closed: One day (6 / 7 weeks)
Mongolian holidays: 30 days / year (As most public facilities are closed in Mongolia)
Annual maximum No. of operation days of the New Center per year: 365 × (6 / 7) -30 = 283 days

Actual utilization rate will never be 100 percent due to the time necessary for setting up and putting away chairs, tables, AV equipment, etc. before and after training/seminars, which is about one to three days each, and is also influenced by timing and duration of training programs. Therefore, the actual number of days utilized will be about 1/3 of the maximum number of open days of the New Center even if it is fully utilized. According to the above estimation, demand for the New Center is judged high.

Further more, considering the staff being not familiar with the facilities, the New Center will not be fully operational just after opening. It is assumed that it will take a few years to gain higher efficiency in utilizing the facilities.

2) Exhibition Department

- Outline of the Exhibition Department

The exhibition facilities planned in the New Center is roughly divided into the following four categories.

- Mongolian Habitat Ecology Map
- Steppe eco-system
- Forest eco-system
- Freshwater eco-system

It is planned to collect admission fee for entering the permanent exhibition hall in order to secure operational expenses of the New Center. In addition, there will be many notice boards for putting up posters and other PR materials regarding natural environment conservation and the like within the New Center.

- Permanent Exhibition Room

The following themes have been planned for the permanent exhibition area.

① Information outlining the eco-system of Mongolia

② Information on water according to catchment areas (rain/snow fall, glaciers, permanent snow, permafrost, human and livestack population, crop production, forest fires, pests, and mining development)

③ Eco-system of each catchment area (Altay, Hangay Steppe, Govi) and endangered species in each eco-system

④ Information on changes and threat (rainfall, glaciers, permanent snow, permafrost, rivers, change / extinction of forest area)

⑤ Promotion of cooperation for environmental conservation

⑥ Information outlining the ecological environment in Mongolia by the map of the entire eco-system of Mongolia

⑦ Freshwater eco-system, including the exhibition of live fish in aquariums

⑧ Forest area eco-system

⑨ Steppe eco-system

- Program Exhibition Room (Exhibition Entrance Hall)

This room will be used to post posters for raising awareness of environmental conservation, to publicize natural environment conservation projects and to promote ecotourism.

- Audio-Visual Hall (Auditorium)

This room will be used to show TV programs and films to the public and foreign tourists. The TV programs and films shown here will be such as the ones made by MNET for public service

announcement and environmental prevention for TV broadcasting, e.g. forest fire prevention, prohibition of animal and plant collection, prohibition of bringing in chemicals for the use of mineral sampling and air pollution problems, and four documentary films on environmental issues. Other TV programs and films regarding the natural environment of Mongolia will be shown in addition to these access programs.

3) PR / Educational Material Production Department

MNET produces its own PR and educational materials and it also contracts out production of many materials to Science Academy and NGOs.

Printing posters and textbooks will be the main function. General educational materials will be prepared by the MNET officials and academic publication will be outsourced to the Science Academy. About ten publications are scheduled to be made from the last couple of years. In recent years, cases of outsourcing and receiving assistances are increasing. For example, some of the material production is outsourced to NGOs, who are selected by competitive bidding and biannual (spring and autumn) production of posters and brochures on environmental preservation are supported by UNDP and other donors. Because the production of materials is costly, the need is very high for having a facility to produce the materials within the New Center for cost efficient production of the materials.

In addition, for promoting awareness of environmental issues, a weekly 20 minute program called "Ecology Telescope" on radio and a monthly program "Natural Environment" produced by Mongolian Television on TV are broadcasted.

Because there is no equipment to produce such publicity materials, production of these programs are fully entrusted to the broadcasters. To date, there have been four environmental documentary films and several TV programs made, e.g. TV programs on forest fire prevention, prohibition of animal and plant collection, prohibition of bringing in chemicals for the use of mineral sampling and air pollution. It is planned to reduce the outsourcing cost by self-producing these materials in the New Center

Ready-made materials as well as self-produced ones will be sold while new materials are being produced. Ones related to policies and new environmental themes will be newly produced and ones with popular contents will be duplicated from originals. Demand for these popular materials is growing because of the increased impact of environmental changes in recent years. New demand especially from the donor counties and NGO projects is expected to increase further. It is expected that about 20 to 30 % of the ready-made materials such as "Natural Environment Report" will need to be updated as needed every several years.

The following is a portion of publicity materials produced last year. These materials will be placed in the New Center and distributed to educational institutions and environmental organizations at no charge or for a fee.

Table 2-11 Some of the Publicity Material Published

	Publicity Name	No. Of Copies	Publisher/Investing Org.	No. Of Pages
1	Environment report of Mongolia 2007-2008	1,500	Government project	17
2	Prevention of Forest Fire	3,000	Forestry administration office	1
3	Forestry Development	200	Forestry administration office	6
4	Measures against illegal logging	300	Forestry administration office	2
5	Introduction to environmental project	600	Natural Resources Information Management Agency/Project/the Netherlands	1
6	Newsletter on Nature Environment Projects	600	Natural Resources Information Management Agency/Project/the Netherlands	3
7	Nature Environment Management and NGOs	300	Natural Resources Information Management Agency/Project/the Netherlands	7
8	Special Protected Areas of Mongolia	1,000		18
9	Ministry of Nature and Environment-20 years	500	MNE	10
10	Handbook for Nature Environment Laws	1,000	Project	27.1
11	International Law and Nature Environment	300	MNE	17.9
12	Report of the Ministry of Nature and Environment 2008	1,000	MNE	6
13	Guidebook for Environment protection	1,000	Project	3
14	Guidebook for establishment of the Community unions and environment protection	2,000	Project	3
15	NGO involvement in nature conservation	500	MNE	9
16	Protection and utilization of natural resource of special species Coopertive rules	1000	MNE	2.5
17	Natual environment statute book	1,000	Project	25
18	Research paper related to nature conservation	800	Biannually	20
19	Magazine “Living Environment”	2800	Quarterly	32
20	Observation Guide	500		2
21	Observation record/results note	2000		5
22	Publicity Guide	3500	MNE	2
23	The source protection handbook	1000	MNE	3
24	Rare amimal protection guidebook	2000	MNE	1

It is planned to carry out 1. Printed matter: poster (A1 size), creating documentation (A4 size), 2. cataloging by taking photos, 3. production of multimedia teaching materials and publicity materials to raise awareness, 4. production of training videos (by shooting and editing the training seminars at the New Center for re-use) at the New Center

4) Information Department

There are many organizations carrying out environmental conservation activities in Mongolia. However, most of the information related to environmental researches to date has not been

systematically organized and stored. Rather, the information is kept scattered among the Mongolian Academy of Sciences, Hydro-meteorological Center, and relevant organizations such as donor countries.

As just described, because the information is not centralized, a comprehensive understanding of research results and findings of the investigations has not been obtained and it is extremely difficult to access overall information on some specific issue. As a result, the situation has not allowed the administration to take effective measures.

It is planned to consolidate the scattered information regarding natural environment conservation for better utilization. Education and propagation of the public, tourists and students regarding natural environment conservation and support of such activities through provision of the information will be carried out in the New Center.

In recent years, the form of information to the above mentioned group is shifting from printed matter to audio-visuals. It is planned to make the information available at the New Center anytime. Main activities being planned are 1. collecting, organizing, reading and lending the data on environment and eco-system conservation, 2. preparation of inventory of A/V materials, scheduling film shows and implementing them, and 3. preparation of digital database and provision of browse/search services.

The consolidated information will be used for preparation of PR and education/training materials and will be reflected in the contents of the training and seminars.

5) Research Support Department

This department is where training on monitoring operations to be conducted by MNET officials, rangers and the like will take place.

In order to draw attention of visiting students to natural environment through simple experiments such as water quality tests, observation by using microscope, etc., it will function as an open laboratory.

(3) Selection of the Project Site

1) Project site location

The project site is situated approx. 4km south from the city center. It takes 10 min. by car form the city center when not in heavy traffic. Though the traffic of the front street is not to a level of being congested, it is rather busy because the Mongolian State University of Agriculture is opposite to the site and condominiums and an international school are beyond the site. Many housing complex projects are being developed around the site and rapid urbanization in the area is expected from now on.

2) Access

The means of transportation to the site is only buses and taxies since there are no train stations nearby. About 15 meters away from the site is a bus terminal commonly used by several bus operators. There will be no access problem since the buses operate very frequently.

3) Zoning of the project site

The project site is situated in the Special Protected Areas of Bogdo Khan national park, which was established according to the Special Protected Areas Law enacted in 1995. The Special Protected Areas are divided into four sub zones, Core Zone, Protect Zone, Limited Zone, and Buffer Zone. It was confirmed at the Ministry of Nature and Environment, Special Protected Area Administration Department that the project site is within the Limited Zone where construction of facilities for environmental protection activities and tourist camps are permitted.

4) Land use permit of the project site

The central administrative body regarding Special Protected Areas is MNET, which is the authority to determine the land usage in accordance with Clause 9 Article 27 and Clause 1 Article 33 of the Special Protected Areas Law. A land use permit for the project was issued on June 19th, 2007 by the Director of Special Protected Area Administration Department of MNET.

5) Geological condition

According to the soil investigation of the proposed site carried out during the basic design study, the stratum shows a more than four meter deep solid gravel bed below the surface soil of sand. Thus a spread foundation system can be used below the freezing depth and there is no need for special consideration such as piling.

Further, the site has no problem with regard to topographical and infrastructure conditions and thus it is judged being suitable for the project.

2-2 Basic Design

2-2-1 Design Policy

2-2-1-1 Design Policy for Building

(1) Basic Policy on Building Design

When designing the facilities, an appropriate scale and specification of the building shall be decided by verifying detailed activity plan, e.g. the contents of training activities, layout of training equipment, and exhibits as well as following the policies described below.

1) Since the site is within the Special Protected Areas of Bogdo Khan national park, the building layout and appearance of the building should be made so as not to spoil the scenery of the park.

2) Considering the severe cold climate, special attention is to be paid to thermal insulation to obtain constant interior temperature. Aiming at becoming a model building for energy saving technology, environmental building technology, which is adaptable in Mongolia to be used and lowering building operation and maintenance cost and prevention of building deterioration measure are to be incorporated into the design.

3) Since the foundation in Mongolia shall be set under frozen earth level enabling a multi-story building to be constructed for minimizing the environment impact and lowering construction costs, it is better to design it as a four story structure.

(2) Policy on Determination of Sizes of Facilities

Appropriateness of scale of the building has been determined by taking into consideration the activities of the center, flow of visitors and equipment/furniture layout. The actual size of each room has been determined by taking into consideration consistency with training plan and exhibition plan, flow of a large number of student groups (assumed number: equivalent to maximum three classes or 110 people), required area of each room by placing corresponding furniture and equipment to the room, and necessary widths of passages and entrances.

(3) Policy on Natural Conditions

In Ulaanbaatar, where the project site is situated, the winter season is very severe with the annual average temperature being approximately -1.1 ˚C and falling to minimum of –36 ˚C during the winter and thus heating is needed for 8 months a year. For this reason, top priority has been given to thermal insulation and air tightness in designing the building since natural ventilation is likely to have negative effects on indoor

environment, e.g. heat loss by letting in cold fresh-air. In practice, the walls and roofs will be externally insulated, the windows will be double glazed and their area reduced to minimum requirements for efficient thermal insulation in order to obtain thorough energy efficiency. Furthermore, working rooms have been placed on the sunlit side of the building for better heating effect. Each entrance of the building will have an entry room for reduction of fresh-air intake. Exterior finishing materials that are highly resistant to freezing, drying, sunlight and dust storms have been selected to cope with the harsh natural environment of the region.

(4) Policy on Building Regulation and Building Permit Application Procedures

In Mongolia there are well-organized laws, regulations and procedures pertaining to construction and building permit application. The building construction plan will therefore be drawn up in strict compliance with the relevant local laws and regulations so that the building permit application procedures may be completed smoothly. These procedures are divided into four stages.

① Land use permit from the Authorities and approval for technical conditions from relevant infrastructure authorities and companies are to be obtained during the basic design stage.

② After ①, detail design must be examined by the Construction Agency, Fire Department, and Heating Department in Ulaanbaatar.

③ After selection of the Contractor, a commencement permit is to be obtained from the Construction Agency before starting the construction work.

After this, ④ on-site inspections by the engineers of the Construction Agency are carried out 2 to 3 times during the construction stage, and building use permission must be obtained after the completion of construction.

The land use permit in the step ① has already been obtained.

(5) Policy on Local Construction Situation

The construction methods in Mongolia are greatly influenced by those of the former Soviet Union where parts of the corresponding Russian industrial standards are applied mutatis mutandis although Mongolia has its own industrial standards applicable to building materials. Main building materials are imported from China in general and thus Chinese standards can also be used in many cases. In implementing this project, since it is not feasible to use JIS materials considering the construction cost, maintenance and management points of view, materials that are in conformity with the locally acceptable standards and easily available in the local market or from China are to be used.

(6) Policy on Use of Local Contractors

In Mongolia, many buildings of official bodies and private businesses have been constructed by using local consultants and contractors. Furthermore, they have been involved in many projects funded by Japan and other foreign countries. It is therefore considered an easy and effective way to use the local consultants and contractors for implementing construction projects. Maximum use of such experienced companies has been a precondition for implementation of this project.

(7) Policy on Facility Grades

No building has originally been designed as a training/exhibition facility in Mongolia to date. Therefore the priority of grading the project will be given to durability, ease of maintenance and management of the building while referring to the grades of common public facilities of Mongolia. For example, building materials, which are highly durable and easily obtainable in the local market, will be used. High priority is given to easy maintenance and management, e.g. no windows and lighting fixtures to be placed at high places for ease of their cleaning and replacement except for roof windows which are accessed from the roof.

(8) Policy on Facility Operation, Maintenance and Management Capability

At present there is no plan to employ any full-time staff for facility maintenance/management for the New Center, however the maintenance will be supported by the Ministry of Nature, Environment and Tourism. For this reason, those items of equipment that are not common in Mongolia and require advanced maintenance/management techniques have not been selected for the project. In selecting equipment that requires daily operation and maintenance, priority has been given to low operation and maintenance cost so that it would not put much burden on operation of the New Center and availability of necessary consumables and spare parts.

(9) Policy on Determination of the Construction Period

There are two seasons in Ulaanbaatar, a long winter, which is from October to the middle of May, and a short summer, which lasts about three months. As the average temperature in winter falls below 0 ˚C, special consideration needs to be given against frost in carrying out exterior work and structural work such as painting and brick lying, which necessitate the use of water.

Furthermore, it should be noted that because it is impossible to carry out earthwork until April, when the frozen ground begins to thaw, most orders for building materials are customarily placed in early spring which results in an overload of orders. As a result of this, supply often cannot meet the demand. Therefore, it is essential to complete bidding and contracting procedures as early as possible during the wintertime so that

sufficient time for ordering building materials can be secured.

2-2-1-2 Design Policy for Equipment

In equipment planning, integrity of the overall project plan and equipment plan, needs, skill levels, administrative organization, operation & maintenance organization, operation and maintenance costs and validity of amount are investigated and confirmed for the selection of equipment. Selection of equipment is limited to within the fields stated in the Minutes of Meeting between the study team dispatched from the Ministry of Foreign Affairs, Japan in March 2007, ① study & training, ② education & propagation, ③ research and study on the activities for No. ① and ②. The specifications and scale of equipment are set considering appropriateness and effectiveness in line with these project purposes.

- Regarding a part of requested equipment for observation and analysis of air pollution, water pollution and soil contamination, which is for full-fledged and large scale activities, is excluded from this project because the objectives do not match with the purpose of the project as well as the lack of information for determination of relevancy such as 1 expected results, 2 specific research, 3 concrete usage, 4 relationship with the existing facilities and equipment, 5 investigation of users.

Concerning air-pollution abatement measures, JICA separately executed the first Study for the Establishment of a Detailed Plan of "the Project for Reduction of Air Pollution in Ulaanbaatar" in December 2008. Thereafter, the second study and the third study was executed in March to May 2009 and August to September 2009 respectively. Continuously, the execution of "the Project for the Capacity Improvement Measure of Air Pollution in Ulaanbaatar" is now planned from 2010. Validity of the request for the full-fledged large scale equipment for pollution abatement measures, therefore, needs to be considered from the results of the detailed plan for the Establishment of Detailed Plan of "the Project for Reduction of Air pollution in Ulaanbaatar".

(1) Policy on Selection of Equipment

Comprehensive assessments on requested equipment are conducted according to the following criteria.

1) Integrity:

- ○ Basic equipment to correspond to the activities of the New Center
- × Equipment does not correspond to the activities

2) Necessity:

- ○ Equipment is deemed essential for the function of the New Center and broad beneficial effects

are expected

△ Equipment that could be dealt with self-help efforts or alternative equipment

× Equipment with limited beneficial effects and lower need from the activity point of view

3) Technical level:

○ Equipment suitable for the present technical level

× Equipment requiring advanced handling technique and technical assistance is necessary to improve the technical level

4) Administrative organization:

○ Staff for handling and managing the equipment is already assigned or expected to be assigned

× Staff for handling and managing the equipment is indefinite at this time

5) Maintenance:

○ Equipment with easy maintenance and current staffing is sufficient to maintain. Manufacturer's maintenance system is established or replacement parts and consumables are easy to procure locally.

× Equipment requiring routine maintenance, tend to have problems with maintenance, replacement parts and consumables are difficult to procure locally

6) Maintenance costs:

○ Equipment requiring hardly any maintenance cost

△ Maintenance cost is required but would not be a major burden on the budgetary procedure

× Problematic in budgetary procedure. Maintenance cost is required since it is a new equipment or an additional one requiring additional maintenance cost.

7) Quantitative validity:

○ Appropriate quantity for the activities

△ Too many for the activities and need to be examined

(2) Policy on Establishing Scale

Contents of the past activities and records of the target field of training and propagation, e.g. details of training, number of participants, frequency & duration of training, are examined, the scale of training is estimated based on the number of trainees. Thereafter corresponding scale and quantity of equipment are

planned accordingly. The quantity of training equipment for rangers is calculated not for distributing to the presently active rangers but for the training to take place at the New Center. Regarding the equipment for the Open Lab., with distinctive differences from full-scale professional equipment for water pollution, air pollution and soil contamination researches, items for basic training shall be selected considering the purpose of the project.

(3) Equipment Procurement Plan

1) Local Procurement Conditions

Many widely used pieces of furniture, computers, home appliances and electrical equipment in Mongolia are products from China. Some of those items are sold worldwide and certified distributors/agencies exist in Ulaanbaatar. Therefore personal computers and the like can be locally procured.

2) Selection of Countries for Procurement

In principle, locally available equipment, whose manufacturer has local distributors is to be procured. However, the price, quality, and ease of transfer are also to be taken into careful consideration when planning. Regarding precision electronic equipment, products of Japanese manufacturers from Japan or China are to be selected.

3) Procurement Conditions of Equipment

Most of the equipment will be procured from China or Japan. Transport of goods will be by land in containers from China since Mongolia is a landlocked country having a border with China. In the case of importing goods from Japan, there are two modes of transportation, by air directly to Ulaanbaatar and by surface, with which by ship to Shanghai and by rail to Ulaanbaatar. About half of items in the equipment procurement plan is furniture which is bulky and, therefore, priority is given to the shortest distance country from Mongolia, China, for its procurement.

(4) Policy on Operation and Maintenance

The following operation and maintenance guidance will be carried out by installation contractors for the equipment that require operation and maintenance training. Operation manuals and other relevant manuals along with distributors/agents list will be provided.

1) Operating instructions; General description & technical data, operating procedure, and important notice

2) Maintenance Method; Daily inspection, and servicing procedure

(5) Policy on Procurement

Basic study was carried out within Mongolia on the assumption that most of the items would be procured locally. However, much of the essential equipment for the project is imported from China, ASEAN countries and EC countries. Therefore, the equipment for the project is to be procured from Japan, ASEAN countries and EC countries, or manufacturers which have local distributors. Procurement policies are shown in the following table

Table 2-12 Procurement Policy

Equipment by Dept.	Country	Basis
Ranger Training	Japan	Purpose of use and handling of the equipment call for high quality and safety (e.g. Rubber boat). Therefore, Japanese products, which comes with guaranteed product quality
Research/Open Lab.	Japan	Products of Japan, which have reputation for high quality, are to be procured because the equipment used for weighing, analysis, and observation of samples requires accuracy, strength and safety.
Natural Environment Information Training	Mongolia and Japan	Imported products available in the local market are to be procured for the ease of use and maintenance. Because AV equipment constantly advances, the latest and popular model of AV equipment will be procured locally. However, procurement from Japan might be considered for some equipment that is difficult to procure locally due to its certain configuration.
Exhibition/Freshwater Eco-system Management	Japan	Circulating aquarium of year-round operation for live freshwater fish requires durability and safety. Japanese products which have reputation for high quality and for which sufficient meetings can be held and arrangements can be made are to be procured.
AV Equipment and Printing/Binding	Mongolia and Japan	Equipment with general functions is to be procured locally. Printing machine for which consumables and replacement parts are available in Mongolia is to be selected.
Furniture	Third Country (China)	Chinese products are to be procured because 1) it is difficult to procure furniture locally because woodcutting has been prohibited in Mongolia since 2004, 2) total volume is large and it is advantageous to procure from the nearest third country since the transportation cost will be minimized for the volume. In order to ensure level of quality, the material and finish will be confirmed at the local factory during the production.
Equipment for LAN	Mongolia	In order to ensure the system in consistent with the local communication conditions, imported products from the local market are to be procured. Further, connection work for establishing LAN system is to be carried out by a local contractor

(6) Policy on Schedule

It is important to make a transport plan with sufficient leeway because most of the equipment in the project requires installation including build-to-order large equipment such as the re-circulating aquarium for exhibition. The aquarium requires time for trial operation to check water temperature control, recirculation of water by filling up with water after assembling and installation. Therefore the plans for placing orders and transportation of equipment are to be made to ensure sufficient time for the above.

2-2-2 Basic Plan (Building/Equipment)

2-2-2-1 Building Plan

(1) Project Facilities

1) Functional Structure of the Project Facilities

The New Center will function as the institution which provides services, e.g. information, education/propagation, and technical assistance as well as conducting training and seminars on nature conservation. It is expected that the center will function as a base for conservation of natural environment and eco-systems in Mongolia. Major components of the facility to support the activities of the center are as follows

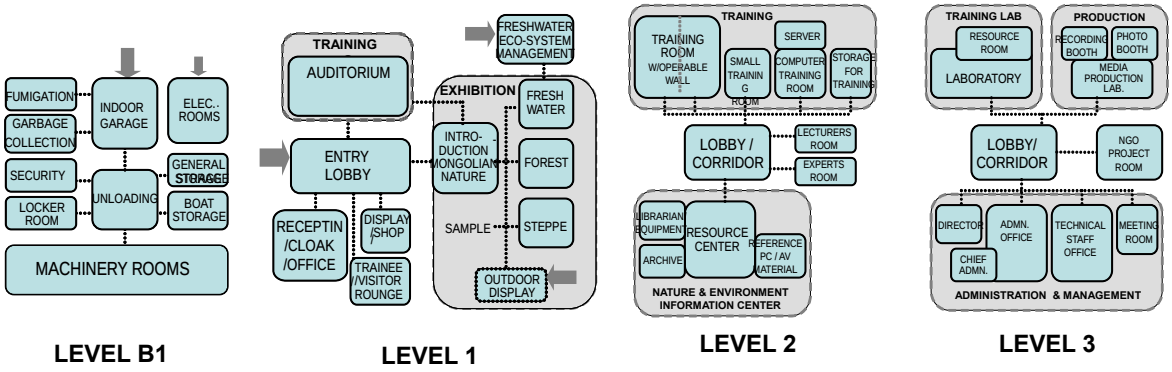


Fig. 2-1 Major Functional Components of the New Center

2) Topography and Landscaping

The project site is a long and narrow rectangular shape stretching out from east to west. The Zaisan hill, which is visited by many tourists, lies beyond the east side of the project site. Office buildings are under construction on the front street side, which lies on the west, of adjacent plots of north and south sides. The north and south sides of the university premises across from the project site are used as parks. The site is basically flat with a gradual slope in the north-south direction. The front street is a major street with the National University of Agriculture right across the street and a good publicity is expected. Therefore, the building is planned to be near the front street. There are hardly any visual obstacles between the Zaisan hill observation deck and the project facilities, which are situated in the middle of wild field. Therefore the project facilities have been designed taking harmony with the scenic view of the PA on the eastern side into consideration.

3) Access to the New Center

The means of transportation to the site is only buses and taxies since there are no train stations nearby.

About 15 meters away from the site is a bus stop commonly used by several bus operators. There will be no access problem since the buses operate very frequently.

The main access is placed facing the west side front road. The nearest bus stop is located in front of neighboring premises providing convenient public transportation access to the New Center, however, it is expected that there will also be visitors using cars. Therefore access road for visitors and administrative use vehicles, a porch, car park for visitors and Center staff are provided within the project site. Minimum number of parking lot is planned in the project because in the case of parking space shortage, open space within the premises can be used.

(2) Architectural Plan

1) Layout Plan

Particular attention has been paid to the following points in preparing the site layout plan.

① According to the Municipal Urban Planning Bureau of Ulaanbaatar, the project site is within the city planning zone and the front road is planned to be widened. Considering that, the buildings are to be set back.

② Provisions for isolation distances between adjacent external walls depend on the specifications for fire-resistant rating of the walls according to the local fire regulations. The site layout and the specifications of the exterior walls of the project will be planned in accordance with the local fire laws and regulations.

③ The New Center is placed towards the front street side of the site so that necessary development area within the Bogdo Khan national park is minimized, visual continuity with the surrounding parks will not be disturbed and an efficient utilization of unused land in the future is made possible.

④ There are main service lines laid along the northern boundary. Therefore, this part will be used as parking lot but not building.

2) Floor Plan

Particular attention has been paid to the following points in preparing the floor plan.

① A plane rectangle shape is adopted in order to minimize the total exterior wall length thereby reduces the initial cost and heat loss.

② Due to climatic conditions, it is necessary to build foundations below the freezing depth. In order to reduce impact to the environment, the building area is minimized by stacking the floors, which reduces the initial cost at the same time. Further, making the building area compact contributes to easier shifting of the building to cope with conditional changes in the future that maybe required due to unknown factors such as the discovery of underground service lines, buried troves, changes of building regulations, etc.

③ A rational floor plan corresponding to frequency of visitors' access and connection points of service lines is sought for by placing facilities for general visitors on the ground floor, various training rooms and the Natural Environment Information Center on the 1st floor, laboratories and offices where relatively low number of visitors access on the 2nd floor, and machine rooms which connect to service lines/pipes through under ground on the basement floor.

④ Rooms for full-time staff are placed on the southern side for effective use of natural light and heat during the daytime and the rooms with low utilization rate and/or rooms that need no natural light are placed on the northern side. In addition a lobby lit up with natural light is placed in the center of the building in order to reduce the lighting load of the hallway.

⑤ A specimen storage, where maintaining a constant temperature is the uppermost importance, is placed deep inside the building, where temperature is most stable by avoiding having walls facing outdoor, so that air conditioning cost of the room can be minimal.

⑥ A hall which can be used for seminars, guidance to visitors, showing multimedia materials and programmed exhibitions is placed in the center of the facilities in order to utilize it for various needs.

⑦ A café and a shop, which will generate extra income to cover a part of operation cost and propagation/education activities cost, have been planned for visitors' convenience.

⑧ Improvement in the effective area rate and utilization rate of the facilities is obtained by integrating two ore more functionally duplicated rooms into one and minimizing floor area by incorporating circulation space into functional space.

⑨ The buildings have been designed as partially barrier-free, e.g. the rooms to be used by visitors the most are placed on the ground floor with no floor gaps.

3) Exhibition Plan

The permanent exhibition facility of the project is planned for the following exhibits. Exhibition rooms and related facilities are planned to meet the contents and nature of the exhibits.

- PC Monitor Exhibition
- Panel Exhibition
- Endangered species exhibits (photos, samples, live fish, fossils and replicas)
- Illegal logging and poaching product exhibition (exhibition of confiscated items, etc.)

The exhibition room on freshwater eco-system is planned to have a live fish exhibit. Equipped with a water reserve tank and relevant breeding equipment, a freshwater eco-system control room, which can be directly accessed from outside for supplies, is provided adjacent to the exhibition room.

4) Required Rooms of Each Department in the New Center

Size of each room was determined based on the layout of required furniture and equipment in the room, which was prepared after taking into account the staffing and contents of the services. Further, functionally duplicated rooms are integrated to enhance the utilization rate of the facilities.
The following table shows rooms needed and the floor area of each room based on the results of the above examination.

Table 2-13 Function and Usage of Rooms by Department

Dept.	Facility Name	Function and Usage
Training (GF /1F)	Multi-purpose Hall cum AV hall, program exhibition room, and seminar rooms	・Suitable for seminars using multimedia materials as well as training for the public, ・Seminars held by donors and foreign NGOs ・Can be used as international conferences on environmental issues ・Can be used as the program exhibition room by putting away chairs ・108 seats
	Seminar Room (1), (2) cum Ranger Training Room	・Training for MNE and related organizations' officials and practical drills for rangers ・Can be used as one 75-seat room or two 36-seat rooms by using sliding wall
	Seminar Room (3)	・Used for a small group training/seminar of maximum 12 people ・Used as a small group discussion or study room during a training session
	Computer Lab. cum Environmental Map Preparation Room	・Capacity: 10 persons + one lecturer ・Mainly used for training of local officials who are involved in environmental research ・ Used for operations training of map data procession software and environmental information management software ・Can also be used for making environmental map related materials by using GIS and the like
	Lecturers' Room	・Shared preparation room used by four lecturers
	Training Equipment Storage	・Used for storing chairs of the Auditorium for the training room to be of multi-purpose usage such as holding program exhibition
	Teaching Material Storage	・For the use of storing teaching materials
	Experts' Room	・A room for short-stay visiting experts who assist in training and other activities of the New Center
	NGO Project Room (1), (2)	・Workroom for environmental NGOs
Exhibition (GF)	Permanent Exhibition Room (Consists of four departments; ①Mongolian Eco-system Map, ②Steppe Eco-system, ③Forestry Eco-system, ④Freshwater Eco-system)	・Specifications and details of the room depend on the exhibition program. List of exhibits and exhibition programs must be issued by Mongolia in order to carry out detail design. ・Exhibits and exhibition panels are to be borne by Mongolia and exhibition cases, tables and lightings by Japan side.

Dept.	Facility Name	Function and Usage
	Sample Storage cum workshop for preparation of exhibits and specimens	・Preparation for exhibitions and processing specimens ・Storing miscellaneous items for exhibition and consumable items such as exhibition panels, display lightings
	Special Storage	・Storing items tat require controlled environment such as stuffed animal specimens and preserved plants ・Providing minimum required size for storing exhibit replacement but not for storing research purpose specimens
	Exhibition Entrance Hall	・To exhibit environmental protection activities, overseas cooperation on environmental projects by placing exhibition walls. (assuming to use panels)
	Lounge/Anteroom	・Lounge for exhibition area sharing functions as exhibits delivery route, passage to outdoor exhibition area and emergency exit
	Exterior Exhibition Space	・Outdoor paved area, also used for Ranger's outdoor training ・Exhibits to be provided by Mongolia
	Fumigation Room (BF)	・To fumigate plants and stuffed animals
Natural Environment Information Center (1F)	Information Center	・Library, Video/PC Corner, Librarian's counter ・Reading area for printed information ・Viewing video library; videos, CDs, DVDs, and visual training record, etc. ・Computer for information searching
	Equipment Storage cum librarian's office	・Install a server to store publicity material, educational material data, recorded video of training being carried out.
	Archive	・Store PR and educational materials as well as published materials.
PR Data / Teaching Material Preparation (2F)	Media Lab.	・Simple publishing and AV material preparation takes place, e.g. from data collection, editing, printing to simple bookbinding. ・High grade printing will be outsourced.
	Photo Booth	・Photo booth for small sample photo shootings only will be provided
	Recording Booth	・Soundproofing booth for narration recording for video editing will be provided but not a broadcasting studio.
	Storage (Data) cum General Storage & Book Storeroom	・A general storage cum book storage to store data
Freshwater Ecology Management (GF)	Freshwater Management Room	・A backup exhibition aquarium and relevant equipment are to be installed with a direct access to the Freshwater Ecology Exhibition room. ・Store relevant breeding equipment for exhibition.
	Anteroom	・To be used as a carrying-in route of live fish.
	Storage	・To store work tools
Open Lab. (2F)	Open Lab.	・Train Rangers and NGO staff for environmental research
	Resource Room	・Store expensive equipment
	Measurement Room	・Provided for use of precision measuring devices
Administration	Garage cum Unloading Area	・Indoor parking space for two official vehicles is provided to prevent damages during winter..
	Office	・The size of the office is decided based on the organization chart of the Center in the operation and management plan of the Center.
	Storage (Ranger)	・To store mainly outdoor use equipment such as tents and stretchers.
	Meeting Room	・One meeting room of 16 seats is planned for research and administration purposes. When necessary, one of the training rooms can also be used for the purpose.
	Reception Office	・Functions as the guide of the New Center, guide to the protected area, sales of exhibition tickets. Equipped with a P/A system
	Information / Shop /Display	・Occupies a part of main lobby
	Lounge	
	Office	・Equipped with a fire alarm panel, relevant alarm panels, and an emergency P/A system
	Machine Rooms	・A/C machine room, reservoir tank room, substation, generator room, pump room and MDF room
	Server Room	・Equipped with equipment for a LAN system within the Center
	Unloading Area	
	Stairs, Hallway, Hall, General Storage	
	Toilets, Toilets for Disabled	
	Pantry	
	Garbage Room	
	Storage (Adm)	・To be used to store facilities maintenance tools and consumables, etc.
	Locker Rooms	・For the use of staff and trainees
	Boat Storage	・To be used to store rubber boats
Outdoor Facilities	Visitors Parking	
	Staff Parking	
	Vestibule	

5) Floor Area of Each Room

The following table shows necessary number and floor area of each room that were determined based

on the function, layout, and required capacity.

Table 2-14 Department-wise Necessary Floor Area of Each Room

Dept.	Facility Name	Planned Internal Dimensions (m^2)	Notes / Calculations
Training	Multi-purpose Hall	126.66	No. of seats = 108, Area per seat*1 = 1.2 m^2, Stage: 13.72m^2 108 seat × 1.2 m^2/seat＋13.72m^2＝143.32 m^2
	Seminar Room (1)	53.19	No. of seats: 36 seats (trainee) + 1 seat (lecturer) = 37 seats Area per seat*1 = 1.6 m^2 37 seats × 1.6 m^2 = 59.2 m^2
	Seminar Room (2)	50.68	No. of seats: 36 seats (trainee) + 1 seat (lecturer) = 37 seats Area per seat*1 = 1.6 m^2 37 seats × 1.6 m^2 = 59.2 m^2
	Seminar Room (3)	26.59	No. of seats: 12 seats, Area per seat*1 = 2.4 m^2 12 seats × 2.4 m^2 = 28.0 m^2
	Computer Lab.	32.04	10 seats, a large printer, a scanner are to be installed
	Lecturers' Room	24.00	3 persons × 9 m^2/person*1 = 27.0 m^2
	Training Equipment Storage（1 F）	7.31	108 seats to be stored by using 11 storage racks (10 seats per rack)
	Teaching Material Storage	6.86	37 seats to be stored
	Experts' Room	14.91	2 persons × 9 m^2/person*1 = 18.0 m^2
	NGO Project Room (1)	39.83	8 persons × 9 m^2/person*1 = 48.0 m^2
	NGO Project Room (2)	29.60	5 persons × 6 m^2/person*1 = 30.0 m^2
Exhibition	Permanent Exhibition Room: Freshwater Eco-system	37.52	Decided by layout of equipment (Refer to 1F Plan)
	Permanent Exhibition Room: Forestry Eco-system	31.40	Decided by layout of equipment (Refer to 1F Plan)
	Permanent Exhibition Room: Steppe Eco-system	33.68	Decided by layout of equipment (Refer to 1F Plan)
	Permanent Exhibition Room: Mongolian Eco-system Map	40.22	Decided by layout of equipment (Refer to 1F Plan)
	Sample Storage cum workshop for preparation of exhibits and specimens	15.57	Store movable panels and panels for installation and preparation of specimens to be carried out
	Special Storage	8.37	4 steric exhibits of 1 m high of more × 2.4 m^2/item = 9.6 m^2 12 steric exhibits of less than 0.5 m high × 1.1 m^2/item = 13.2 m^2
	Exhibition Entrance Hall	4.0	Panels are to be installed
	Fumigation Room	3.89	Able to fumigate a exhibit of L: 1.5m × W: 1.5m × H: 2.5m
	Lounge/Anteroom	6.86	To be used for resting and bring-in large exhibits.
	Exterior Exhibition Space	252.73	Space corresponding to layout of GEL
Natural Environment Information Center	Information Center	80.87	The following items of furniture are planned in the Information Center for the data pooling, analyzing and searching by the stuff of Ministry of Nature, Environment and Tourism, PA stuff, Rangers and NGO (total about 2,000 persons). 2,000 persons/year ÷ 283 days in operation = 7 persons/day (items of furniture respond to this figure) Reading Desk : 2 tables (8 seats) Study Desk : 3 desks (6 seats) Computer Booth: 4 Partition desks (4 seats) Bookshelf: Out of 3,000 collected books, 1,800 books are to be kept in an open stacks system. (Shelf (90 cm wide) × 20 books × 5 shelves = 100 books / bookcase)
	Equipment Storage cum librarian's office	12.59	Provision of a copy machine and storing very important data.
	Archive	17.50	Out of 3,000 collected books, 1,200 books will be kept in a closed stack system. Shelf (90 cm wide) × 20 books × 5 shelves = 100 books / bookcase Therefore 12 units of bookcases
	Media Lab.	27.15	3 persons × 9 m^2/person*1 = 27.0 m^2
PR Data / Teaching Material Preparation	Photo Booth	6.90	1 person × 9 m^2/person*1 = 9.0 m^2
	Recording Booth	6.54	1 person × 9 m^2/person*1 = 9.0 m^2
	Storage (Data) cum General Storage & Book Storeroom（3F）	4.48	To store posters, printed matter, etc.
Freshwater Ecology Management	Freshwater Management Room	20.83	For storing one middle size water tank/aquarium
	Anteroom (3)	9.40	For taking out a live fish tank
	Storage (2)	2.16	For storing fishing gear and related items

Dept.	Facility Name	Planned Internal Dimensions (m^2)	Notes / Calculations
Open Lab.	Open Lab.	55.65	Setting a Lab. Table for 16 persons. 3 equipment cabinets, Work counters with a sink to be installed on the wall side.
Administration	Measurement Room	6.25	To store precision measures and expensive equipment
	Resource Room	11.29	2 Engineers*1
	Garage cum Unloading Area	40.46	Storing 2 official cars
	Director's Office	19.48	25 m^2/person*1
	Deputy Director's Office 1	12.76	18 m^2/person*1
	Deputy Director's Office 2	12.64	18 m^2/person*1
	Office	41.24	8 persons × 6 m^2/person*1 = 48.0 m^2
	Engineer's Office	29.06	5 persons × 6 m^2/person*1 = 30.0 m^2
	Data Storage Room (3)	4.48	Used as the stacks
	Meeting Room	35.13	14 persons × 2.4 m^2/person*1 = 33.6 m^2
	Reception	12.04	Used by the staff in the office
	Office	21.13	3 persons × 6 m^2/person*1 = 18.0 m^2 Equipped with a PA system
	Cloakroom	6.51	Keep coats and the like of visitors
	Information / Shop /Display	45.66	Decided according to the plan. (Refer to the plan)
	Lounge	61.46	Used by 30 visitors, 30 staff, and 40 trainees in two rotations 12 tables and 48 chairs (to be born by Mongolia side, refer to 1F plan)
	Office Security/Control	10.80	Equipped with a fire alarm panel and other relevant alarm panels
	Fan Room	50.04	Decided by layout of equipment (Refer to B1F Plan)
	Water Tank Room	57.17	Decided by layout of equipment (Refer to B1F Plan)
	Electrical Room	46.88	Decided by layout of equipment (Refer to B1F Plan)
	Generator Room	29.02	Decided by layout of equipment (Refer to B1F Plan)
	Server Room	5.01	Installed a server rack of approx. W0.7m × D1.0m
	Unloading Area	22.40	Used for carrying in ant out
	Stairs, Hallway, Hall, General Storage	—	
	Toilets, Toilets for Disabled	—	B1F: 3.16 m^2 (women: 1 toilet bowl, men: 1 urinal) 1F: 32.44 m^2 (women: 3 toilet bowls, men: 1 toilet bowl and 3 urinals) 1 disabled toilet 2F: 27.03 m^2 (women: 3 toilet bowl, men: 3 toilet bowls and 3 urinals) 3F: 27.03 m^2 (women: 3 toilet bowls, men: 3 toilet bowls and 3 urinals)
	Pantry 2F	3.26	A sink and upper wall cabinet
	Pantry 3F	2.00	A sink and upper wall cabinet
	Garbage Room	5.88	For Separated Collection
	Storage (ADM) B1F	9.64	Storage for fixtures and furniture of facilities
	Storage (Ranger)B1F	35.14	Equipment storage for Ranger training
	Data Storage B1F	19.89	Storage for posters, printed matter and the like
	Locker Room (1)	15.66	6 numbers of six compartment locker for 36 staff
	Locker Room (2)	17.72	12 numbers of six compartment locker for 72 trainees
	Boat Storage	14.27	Storage for 2 rubber boats and survey equipment
Site Area			7,403.07 m^2
Building Area			859.71 m^2
Total Floor Area			2,440.22 m^2
B1F			479.66 m^2
GF			840.03 m^2
1F			557.73 m^2
2F			562.81 m^2

*1: Standard for area estimation of office space : Required area per person, Director: 25 m^2 / person, Manager: 18 m^2 / person, Engineer: 9 m^2 / person, secretary: 6 m^2 / person. (Standard for area estimation of training rooms : large room 1.2 m^2 / seat, middle size room 1.6 m^2 / seat, small room 2.4 m^2 / seat)

6) Sectional Planning

The prime importance has been placed on obtaining sufficient thermal insulation in sectional planning. In particular, the roofs, the external walls and the perimeters of the foundations are to be externally insulated to avoid heat bridging. The height of the building has been designed to firstly obtain sufficient ceiling height to create a comfortable indoor environment, and other aspects such as heating efficiency, economical efficiency and ease of maintenance/management have been taken into account. The height of an atrium is limited to two stories in order to avoid loss of warm air. The roofs will be flat

concrete roofs, which are common in the country, so that the facility volume may be minimized and ease of installation, recording, and maintenance of roof mounted equipment.

(3) Structural Plan

1) Foundation Plan

The result of soil investigations shows that the freezing depth is about 3.7 meters below the ground level. Therefore, it is judged to be appropriate to employ a spread foundation system at about 4.0 meters from the ground level for the New Center.

2) Superstructure Plan

In Mongolia, most public buildings are RC rigid-frame structures. Both outer and inner walls are generally made of bricks or concrete blocks. Common construction methods in Mongolia have been adopted for this project to obtain greater workability and economical efficiency, however, a possible use of insulating concrete block is to be investigated for shortening the construction period. Although PC (pre-cast concrete) panels are commonly used as floor slabs, in situ concrete slabs will be used for the project because PC panels will not necessarily contribute to shortening the construction period since manufacturing PC panels at the plant often delays unless orders are placed well in advance.

3) Guideline of Structure Plan

The standards for earthquake resistant design in Mongolia are based on Russian standards, which were established in the former Soviet Union. The project site lies within one of the seismically most active areas in Mongolia with the MSK seismic scale 7. Structural design for the project therefore is prepared in accordance with the earthquake standards.

In accordance with the relevant local standards, the following design values for the wind force and the snow load are used for the project

Wind load : 0.35kg/m^2 (35.0kpa)

Snow load : 0.50kg/m^2 (50.0kpa)

(4) Electrical Facility Plan

According to the Ulaanbaatar Electricity Distribution Network Company (UBEDNC), the power supplied to the project site has approx. 10% of voltage fluctuation. Thus, an automatic voltage regulator to cover the whole facilities will be installed for prevention of damage to lighting fixtures, appliances and equipment due to the fluctuation. Further, according to a survey carried out by the UBEDNC, annually over 400 times of power failure in the area have been recorded at the substation supplying the area. Because of the

frequent occurrence of power failure, though the duration of each failure is short, an emergency power supply system will be installed to cover the minimum requirement of the facilities to keep them functioning, e.g. circulation pumps for building heating system and water tanks for exhibition

1) Main Power Supply Cable within the Premises

A 10,000V power will be supplied by the UBEDNC. An underground main power supply cable is to be installed between the connection point outside of the project site and the substation/electric room.

2) Telephone Line within the Premises

Underground conduits, hand holes are to be installed between the connection point and the Main Distribution Frame (MDF). Installation of cables up to the MDF is to be carried out by the Mongolian side.

3) Power Supply Facility

An incoming power panel, a transformer, and a low voltage power switchboard are to be installed in the electric room. In order to supply low voltage power of 380-220V to the facilities, a transformer is to be installed in the electrical room since the incoming power is 10,000V.

4) Emergency Power Supply

An emergency power supply system is to be installed in the electrical room to cover the minimum requirement of the facilities to keep them functioning, e.g. circulation pumps for building heating system and water tanks for exhibition. Because of the frequent occurrence of power failure at the site though an average duration of each power failure is rather short of being one hour, a service fuel tank with a capacity equivalent to approx. 30 hours, which is about one month supply, will be installed.

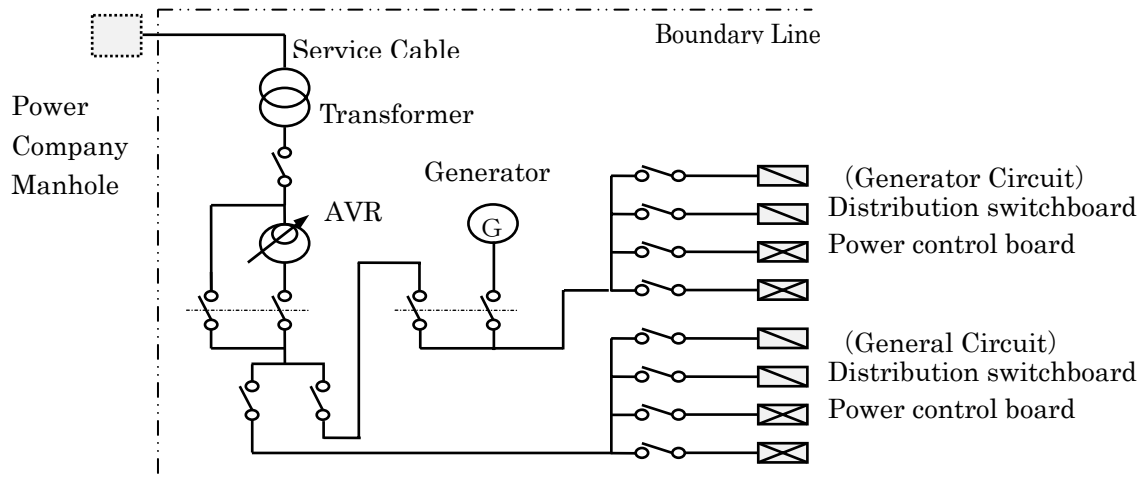


Fig. 2-2 Main Power Supply System

5) Main Power Supply

Distribution switchboards, power control boards and main cables are to be installed in all the required places. In principle, cable trays and cables are to be installed in ceilings

6) Lightings and Receptacles

The lights will be mainly fluorescent lamps. Spotlights will be installed in the exhibition rooms on necessity basis. The target illuminance for each of the main rooms is designed based on JIS and as shown in Table 2-13. Wall-mount type receptacles, in principle, will be installed in places as needed.

Table 2-15 Target Illuminance for Major Rooms

Room Name	Target illuminance (lux)
Office room/meeting room/seminar room	400
Information room/multipurpose room	300
Lounge/lobby	200
Electrical room/ machine room	200
Corridor/toilet/store	150

7) Telephone System

An extension network system is to be established by installing a MDF and PBX in the switchboard room. Multifunctional telephones are to be installed in the offices and standard telephones in other rooms except for the machine room with a telephone outlet only. Conduit pipes for LAN wiring are also to be installed in the required rooms.

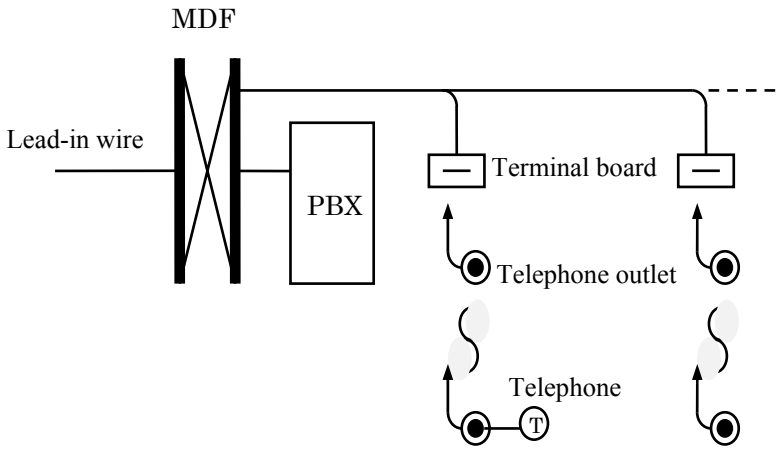


Fig. 2-3 Telephone System

8) Public Address System

A public address system consists of an amplifier in the administration room and a remote microphone at the reception counter is to be installed for providing public address to the whole facilities.

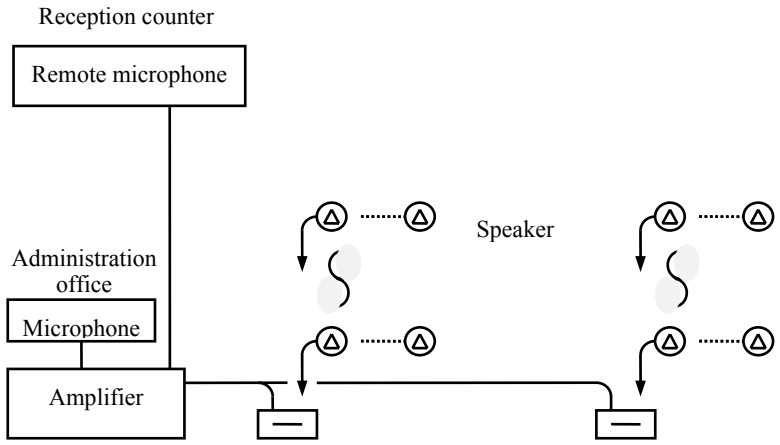


Fig. 2-4 Public Address System

9) Automatic Fire Alarm System

A receiver is to be installed in the administration room and sensors in all the required places, for early detection of fires and for early evacuation.

10) Others

- Television Communal Reception System

  An antenna for TV reception is to be installed and terminals are to be installed where showing environmental programs and disaster prevention programs is necessary, e.g. the training department, the administration department, and the common area.

- AV System

  An AV system for various events is to be installed in the Training room. The sound system includes a microphone system including wireless type and speakers.

- LAN System

  A LAN system is to be installed in the New Center. Conduit pipes and wires are to be installed to connect LAN terminals at required places to the server in the server room on the ground floor through switching hubs in the EPS on each floor. Spare conduit pipes will also be installed in order to make it possible to use internet by contracting with a private provider.

(5) Air Conditioning System

1) Heating System

A district heating system, in which heated water produced in coal-burning power plants is utilized in a district as the heat source, is available in Ulaanbaatar where the project site is situated. Therefore, a plate type heat exchanger is to be installed in the machine room in order to use the heat source within the New Center. Circulation pumps will be installed in the machine room for distributing the exchanged hot water to hot water heat radiators installed on outer walls of each room within the building. Fresh intake air will be heated appropriately by hot water coils in the machine room and the heated fresh air will be distributed to each room. Considering the site being in a severe cold zone, the hot water circulation pumps will be operated continuously on a 24-hour operation basis during the winter for freeze prevention.

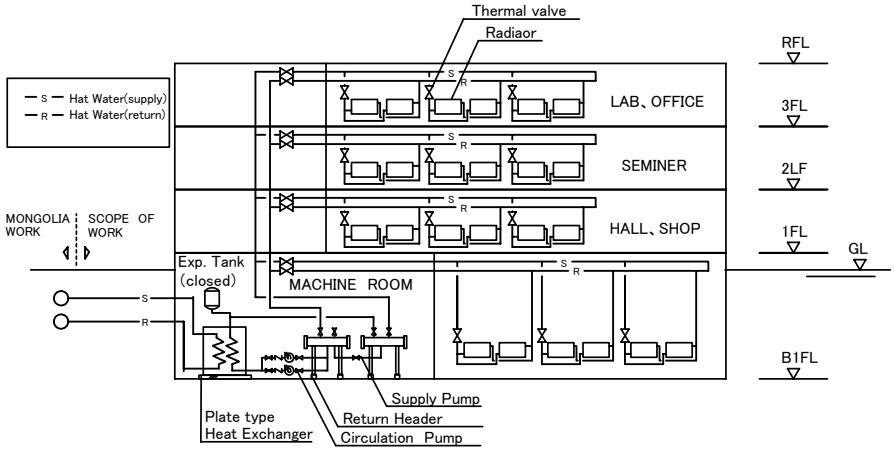


Fig. 2-5 Heating System

2) Cooling System

There is no need for installation of cooling systems in public buildings in general, except for few exceptional cases. However, the design will incorporate ease of natural ventilation by taking the balance with the effects of thermal insulation into consideration because the temperature occasionally rises close to 30^{o} C for a short while during the summer due to the continental climate.

3) Ventilating Facilities

A mechanical ventilation system is to be installed in order to control/maintain the indoor environment as the building is designed to be airtight and all the windows are not openable during the winter. In addition, it is a requirement of the national building codes that mechanical ventilators shall be installed in all public buildings. A heat exchange air intake system, in which the cold fresh air will be warmed

up by hot water and distributed to each room through ventilation ducts, will be installed in the building. The return air is to be mechanically exhausted from the toilets and passages. Considering heat distribution control within each room during the winter, exhausts to let warm air go and air circulation fans are to be installed as the temperature near the ceiling and upper part of the atrium become higher than that of near the floor.

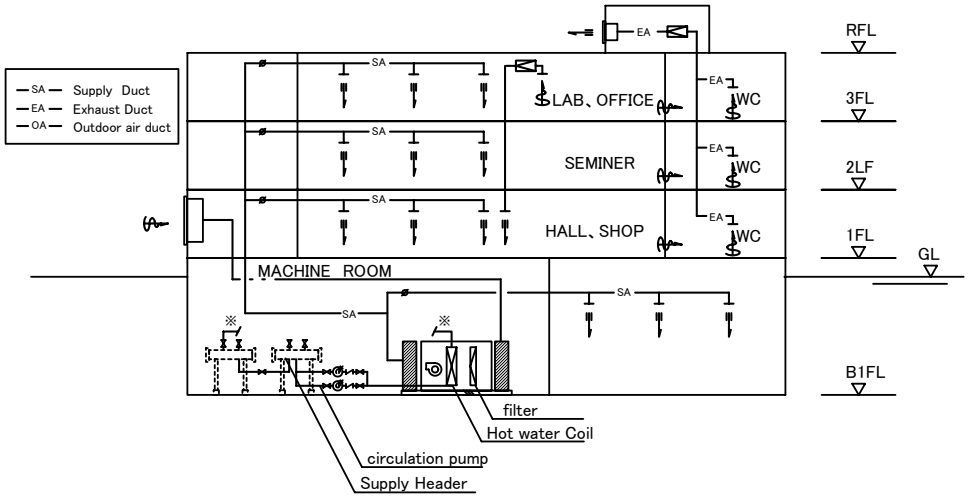


Fig. 2-6 Ventilation System

(6) Plumbing and Sanitary Facilities

1) Drainage System

There is an existing public sewer line near the project site and therefore sewage water will be discharged to the public sewer line. Particular care must be given to the depth of sewer lines, which need to be buried below freezing depth in winter and manholes to have double covers for freeze prevention.

Installation of a connecting sewer line from the existing public sewer line to the site boundary line shall be carried out by the Mongolian side.

2) Water Supply Facilities

Water will be supplied to a reservoir tank from the existing water main and then distributed to each part of the New Center by using pressure pumps. A water supply system with elevated water tank was not selected for the project due to the difficulty in insulating the tank, obtaining sufficient water pressure for distribution and the costliness of construction work. Sufficient capacity of the reservoir is planned based on the peak time of the New Center.

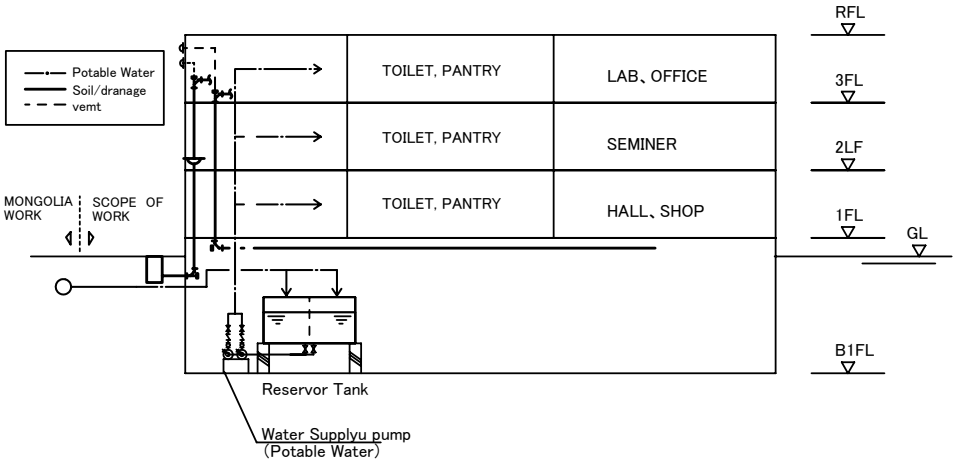


Fig. 2-7 Water Supply and Drainage System

3) Hot Water Supply Facilities

A commonly used hot water heater (tank type) will be installed.

4) Firefighting Facilities

The following fire control equipment will be installed in accordance with the relevant local standards.

- Indoor fire hydrant
- Movable fire extinguisher

(7) Materials/Construction Method Plan

Building materials and construction method for the New Center have been selected in consideration of the local climate, required performance, construction period, construction cost, quantity, maintenance and management, etc.

1) Exterior Finishing Materials

The following table shows the main exterior finishing materials selected and the rationale for their selection.

Table 2-16 Main Exterior Finishing List

Component	Finishing Materials	Remarks
Roof	Protective block on asphalt waterproofing	The best performance of waterproofing is obtained among the locally available waterproofing materials.
Outer wall	Finished Insulated Concrete Block	It is used widely in the domestic market and highly durable. It is maintenance-free. It does not require periodic recoating or repair of cracks unlike mortar coating. It will contribute to reduction in maintenance/ management cost.
Fixture	PVC coated sash, double-glazing	PVC coated sash is better in terms of insulation performance than aluminum sash and steel sash. Double-glazing excels in insulation performance. Both products are used widely in the local market.

2) Interior Finishing Materials

The following table shows the main interior finishing materials selected and the rationale for their selection.

Table 2-17 Main Interior Finishing List

Room	Floor	Wall	Ceiling	Remarks
Exhibition room	Wooden flooring partially ceramic tile	Coated wall	Coated gypsum board	Emphasis is put on sound absorption, humidity control function and ease of cleaning.
Auditorium	Carpet tile	Coated porous gypsum board	Metal open grid ceiling	Emphasis is put on acoustic effects and flexibility.
Entrance hall	Ceramic tile	Coating	Coated gypsum board	Emphasis is put on ease of cleaning.
General training room, Office	Vinyl floor tile	Coating	Rock wool acoustic board	Emphasis is put on ease of maintenance and cleaning.
Toilet	Ceramic tile	Ceramic tile	Coating on water-resistant board	Emphasis is put on water resistance and ease of cleaning

2-2-2-2 Equipment Plan

(1) Overview of Requested Equipment

Along with the purposes of use and ranking indication of “A”, “B”, “C” described below, 188 items of equipment requested by the Government of Mongolia is shown in 7. Reference, Attachment-1 and Attachment -2 is the final equipment list for the project showing the equipment sorted by the field of usage with required quantity and evaluation made by the Consultant in accordance with the seven guidelines for selection of equipment described in 2-2-1-2 Design Policy for Equipment.

A Rank: Basic equipment is consistent with the objectives of the project and being judged as appropriate and essential in order to implement specific plans and tasks and achieve the objectives of the project.

B Rank: Rank “B” is equivalent to rank “A”, however, there is room for consideration of quantity

C Rank: Equipment not consistent with the objectives of the project, equipment whose operation and maintenance cost is not negligible or not bearable, equipment that require higher level of technique in terms of operation and management and unable to verify personnel who will be able to handle it, equipment possibly substituted by the equipment selected in rank “A”

(2) Use and Reasons for Selection of Equipment

Intended use and reasons for selection of major equipment are shown below.

Table 2-18 Equipment Usage by Category and Selection Reasons for Major Equipment

Field	Cate-gory	Use and Reasons for Selection
Training	Ranger Training	Use: Training of Rangers and Instructors of Rangers Reasons for Selection: Rubber boat and outboard engine ・Priority of this item is high because it will be used for not only catching live fish for exhibition but for research of freshwater resources, survey of shapes of the rivers and lakes, water quality analysis, and monitoring activities by the Rangers. ・In Mongolia gill net fishing on the ice in winter is popular but fishing by using boat during the summer is rare. This is because fishing is banned in summer owing to the following reasons; from the ice melting April to summer is spawning season for various fish, youngling becomes adult by much feeding. ・Determining optimum catch based on resource survey and crackdown of poaching are the urgent matters at present Because of the reasons above the necessity of this item is high. Communication equipment ・A set of communication equipment system is planned to ensure communication between the New Center and a vehicle patrolling a few hundred kilometers away from Ulaanbaatar by long-distance radios and between the rangers and the vehicle with transceivers to communicate with each other. ・By providing 18 units of handsets for the rangers, quick mobility will be ensured to cope with disasters, environmental change, monitoring poachers, etc. ・GPS, video camera, binoculars, infrared binoculars, scale tape measure, searchlight, portable speakers, clinometer are the basic equipment for rangers to take along and thus are provided for training
	Research & Open Lab. Training	Use: Training for observation, survey and analysis methods of Natural Environment The training is divided into experiment/analysis in the laboratory and field observation/survey. The purpose of the provision of equipment to be procured under this project is not for large scale academic research but for basic equipment for laboratory use and observation and survey equipment that is closely related to training of rangers. Therefore, equipment necessary for analysis and preparation of statistics from the data of field observation/survey, analysis of collected samples of plants and animals, and preparation of report is to be provided. Reasons for Selection: Echo-finder, bottom sampler, water sampler, plankton net ・There are about 4,000 rivers and lakes in Mongolia. Natural resource and environmental survey of them has not been advanced because of few fish resources. One of the urgent challenges of Mongolia is efficient use and conservation of fish resources. The set of equipment along with the later described cast net, dredge net, and gill net are essential to field survey. Biological microscope, stereomicroscope, glass ware, autoclave, scale, tropical aquarium, distilling apparatus, incubator ・Selected equipment here is for analysis of specimens collected in the field and to be used in the training of rangers and the staff of the New Center.
	Natural Environment Information Training	Use: The objective is to obtain information processing technology through training of “environmental information management”, “preparation of teaching material”, “use of environmental information network”, and “preparation of presentation/environmental material for PA management and other training” and to digitize nature observation data from relevant organizations, to integrate and store, and to provide information in response to the needs of the organizations. The need for the above is increasing. Reasons for Selection: Computer with software; MS Office 2007, anti-virus software, Arc View, and Adobe Video Collection ・To be used for training of basic and advanced use of computer and programming to the staff. In particular the importance of management of map information on GIS geographic information system is high. It was instituted to digitalize environmental data collected in the PAs across the country in 2008 and will be enforced in 2009. Therefore the technical training is an urgent need.

Field	Cate-gory	Use and Reasons for Selection
Education	Exhibition and Freshwater Eco-system Management	Use: The objective is to provide information of flora eco-system of Mongolia by displaying an ecology map of the entirety of Mongolia showing Forest and Steppe eco-systems, and to provide information of the fauna eco-system by displaying stuffed specimen, panels, and aquarium for freshwater animals. Also, information of special protected areas, posters of relevant organizations and garbage issues are to be exhibited. Thus the importance of environmental conservation will be taught and disseminated by showing the specific situation and problems of the natural environment of Mongolia. Reasons for Selection: Circulating type aquarium, dredge net, scoop net, container for live fish temporary store, live fish tank for transportation, portable gas pump ・Plans have been made to raise awareness about growing concern over the increasing number of endangered species owing to polluting rivers, sport fishing, etc. while introducing freshwater inhabiting fish of Mongolia. It is expected to raise awareness of the public who has few opportunities to see live fish.
	AV Equipment / Printing & Binding Equipment	Use: The objective is to promote nature conservation in particular. Provision of the equipment is intended to enhance clarity of messages and subject matters of the training, activity report, various seminars to the attendees. In order to cut expenses in the media lab., textbooks for training and PR pamphlets will be edited, printed and bound, which are used to be contracted out. Further, regarding the programs to promote awareness of environmental conservation on TV and radio, relevant equipment is to be provided for the center to create and edit its own programs. The aim of the new center is to disseminate specific measures to protect the natural environment, current environmental situation and issues in Mongolia to the general public and foreign tourists who visit the center, to offer a place for information exchange to volunteers who are engaged in environmental protection activities, and to act as the center of exchanging and offering information regarding nature conservation. Reasons for Selection: Simultaneous interpretation machine, Video conference equipment, Projector, DVD player, Electric screen, Copy machine, Printing machine, Binding Machine, Video camera, Digital camera, etc. ・It is necessary to carry out training and seminars efficiently by using AV equipment when implementing the above mentioned activities. ・Simultaneous interpretation machine is essential because international seminars and the like are scheduled to be held. ・Printing and binding machines are necessary to produce teaching materials for training and education on their own.
Others	Furniture and the like	Use: Provide furniture to be used for major purposes of the New Center, furniture in the training rooms, the information center, computer lab., open lab., etc. which is to be used by the visitors Reasons for Selection: Reading table, chair, shelves for data storage, shelves for sample store, lockers, magazine rack ・Furniture is selected only for essential activities of the New Center
	Computer Network	Use: The objective is to have information shared by providing LAN within the facility, e.g. environmental data to be shared during seminars in the training rooms, the information center, computer lab., open lab., etc Reasons for Selection: ・Because of the restriction of the area of the project site, rooms requiring LAN are scattered among four stories from the basement to the third floor. It is essential for gaining efficiency as well as it is a requirement by the Mongolian government, i.e. an operation of digitizing all public environmental information is in progress since last year.

(3) Scale and Quantity Plan of Equipment

Contents of the past activities and records of the target field of training and propagation, e.g. details of training, number of participants, frequency & duration of training, are examined, the scale of training is estimated based on the number of trainees. Thereafter corresponding scale and quantity of equipment are

planned accordingly. The quantity of training equipment for rangers is calculated not for distributing to the presently active rangers but for the training to take place at the New Center. Regarding the equipment for the Open Lab., with distinctive differences from full-scale professional equipment for water pollution, air pollution and soil contamination researches, items for basic training shall be selected considering the purpose of the project. Rationale for setting out scale and quantity is as follows.

Table 2-19 Basis for Scale & Quantity Setting

Field	Cate-gory	Basis for Scale and Quantity
Training	Ranger Training	・The record shows that there were 13 new training sessions for rangers and PA staff with a total of 600 attendees in 2009. The number of attendee per session was between 2 to 105 with an average of 36. Proper ranger training is a two year fulltime course with 90 credits. It is necessary to organize classes for few trainees in order to carry out an efficient and high level training. ・The number of trainees per class using equipment calculated based on similar activity records in the past (course details, number of attendees, training frequency and period) is 36. It is judged appropriate to form two classes with 36 trainees per class. Two classes to be held alternatively, one for outdoor training while the other for indoor. ・About 90 people have been trained and qualified as rangers per year totaling 267 between 2002 and 2004. This course is currently suspended, however, is scheduled to resume on the same scale from 2009 and the training courses under this project will be used for qualification. ・In general, rangers work in groups and several groups work together in coordination. Depending on the size of the PA and scope, there maybe a case to have many groups engaged. Therefore, it is necessary to minimize the number of rangers in each group, however in the case of a two member group, if one of them encounters a binding situation, it becomes impossible to work effectively. ・Under this training, each group will consist of the minimum four members so that each member will have opportunity to use the equipment to facilitate the mastery of the use. The necessary number of pieces of equipment is to match the number of groups. 72 people will be trained in 18 groups with a corresponding number of equipment for outdoor training. However, the quantity is minimized for such equipment that the training completes by giving handling instructions in the training room, equipment necessary for a special plan/tasks, equipment for night activities, by having the groups sharing the equipment.
	Survey & Open Lab. Training	・The basic activity of this Center is confirmed as training and the goal is neither big scale nor academic research. Judging from the training scale at Central Lab. of Environment Monitoring in 2007 which was in the range of 4 to 25, the training scale of the project facility is appropriate at 16. ・The quantity of basic equipment necessary for the Open Lab. such as refrigerator, distilled water apparatus, autoclave shall be one, general purpose products such as scale and micropipette shall be a few, and the equipment necessary for field survey and observation such as digital camera, counter, thermometer shall be in accordance with the number of groups or frequency of use.
	Environment Information Training	・The trainings of environmental information software concerning RS/GIS (Remote Sensing / Geographic Information Systems) were held 16 times with consignment in 2009 hosted by Met Agency. The number of attendants of each was 20 and the engineers to be responsible for the increase of information processing are expected. ・There could be a training plan of several people using one computer, however, in order to meet the urgent demand, a consistent, effective, short and intensive training is planned by using one computer per person and achieve an adequate training result. The size of a class is planned for ten trainees with one instructor for this project. Therefore the required number of computers is 11 (=10 trainees + 1 instructor).
Education	Exhibition & Freshwater Eco-system Management	・Seven major fish species inhabiting waterways in Mongolia are planned to be displayed in seven aquariums, i.e. fish that inhabit in rivers 1. endangered species (sturgeon), 2. protected valuable fish species (Ito) 3. large fish (northern pike), 4. small fish (grayling), and fish that inhabit lakes 5. cyprinid, 6. loach, 7. Others (including crustaceans and shellfish). The size of aquariums shall correspond to the size of the fish. ・The combination of kinds of fish to be kept in an aquarium is decided considering appropriate water temperature for the fish (i.e. cold water fish, wide range temperature fish), insect damage, cannibalism, species-wise. Sufficient guidance will be carried out for water circulation system and filtration systems during the installation in order to prevent accidents and to make measures well-known.

Field	Cate-gory	Basis for Scale and Quantity
	AV Equipment / Printing & Binding Equipment	・15 printed materials (guidebooks, handbooks, brochures to raise awareness, and environmental reports) about 19,000 copies (average of nine pages) were printed at the expense of MNET last year. There already were 10 printed materials to be published at the time of the Basic Design Study. Therefore, printing and bookbinding equipment capable of producing 20,000 copies is planned. ・AV equipment, with which AV materials can be made without the need for experts, is planned
Others	Furniture and the like	・The following items of furniture are planned in the Information Center for the data pooling, analyzing and searching by the staff of Ministry of Nature, Environment and Tourism, PA staff, Rangers and NGO (total about 2,000 persons). 2,000 persons/year ÷ 283 days in operation = 7 persons/day (items of furniture respond to this figure) Reading Desk : 2 tables (8 seats) Study Desk : 3 desks (6 seats) Computer Booth: 4 Partition desks (4 seats) Bookshelf: Out of 3,000 collected books, 1,800 books are to be kept in an open stacks system. (Shelf (90 cm wide) × 20 books × 5 shelves = 100 books / bookcase)

(4) Contents of Equipment Plan

The quantity of equipment, necessity of installation, commissioning and initial instruction for operation of the equipment by the contractor are determined by examining requested items of equipment and shown in the following table. The existence of local distributors/agents has been confirmed for the equipment for which after-sales service and maintenance are necessary.

Table 2-20 List for Installation Work, Test Run & Initial Training of Equipment

Equipment No.	Equipment	Quantity	Installation	Test Run	Initial Training
6	Wireless radios	1	○	○	○
36	Fume hood	1	○	○	×
57-61	Circulation system culture tank for aquarium	7	○	○	○
68	DVD edit system	1	×	○	○
76	Simultaneous interpreter system	1	○	○	×
77	Video conference set	1	○	○	×

2-2-3 Basic Design Drawings

① Site plan

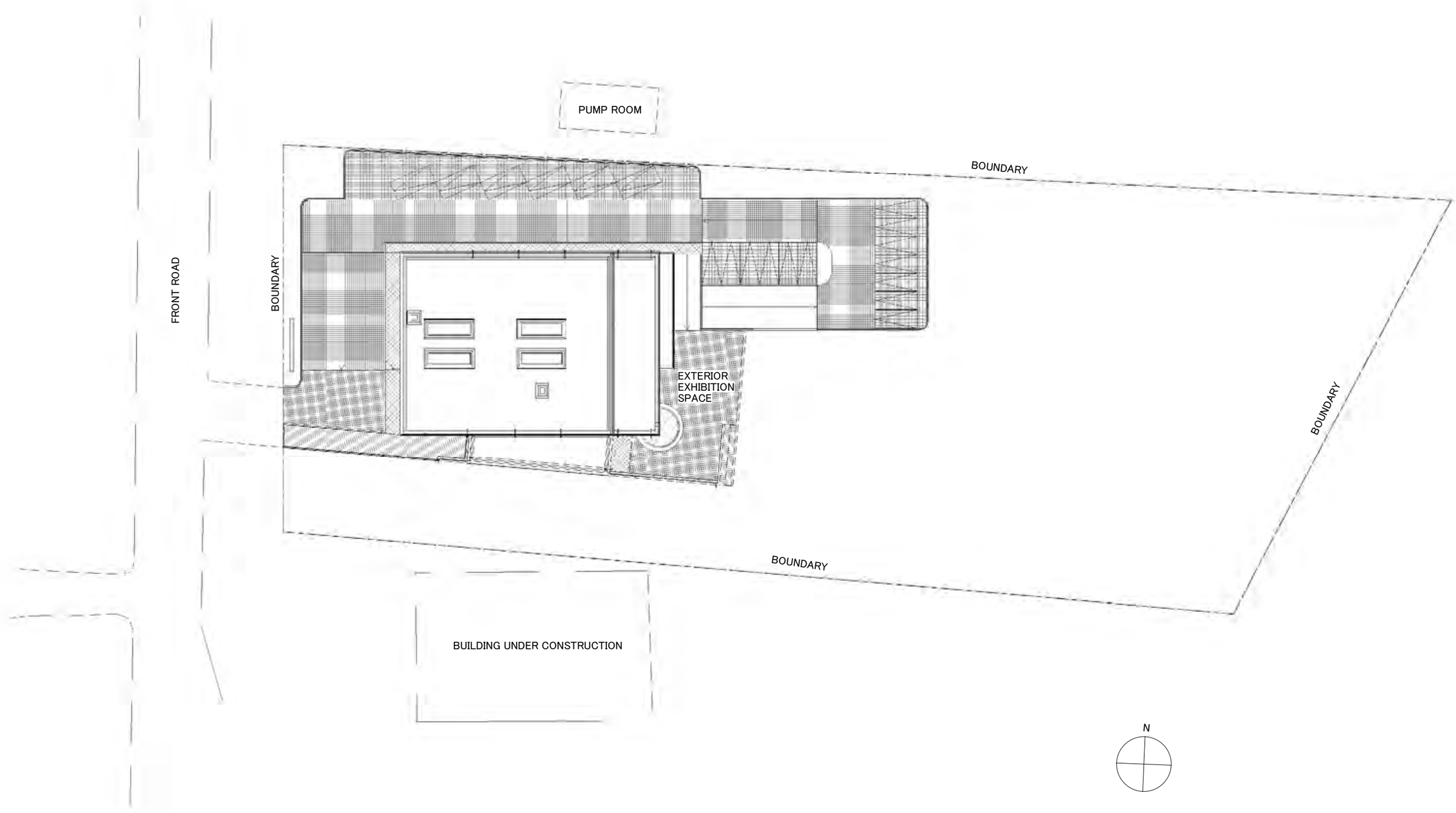
② Floor plans

③ Roof plan

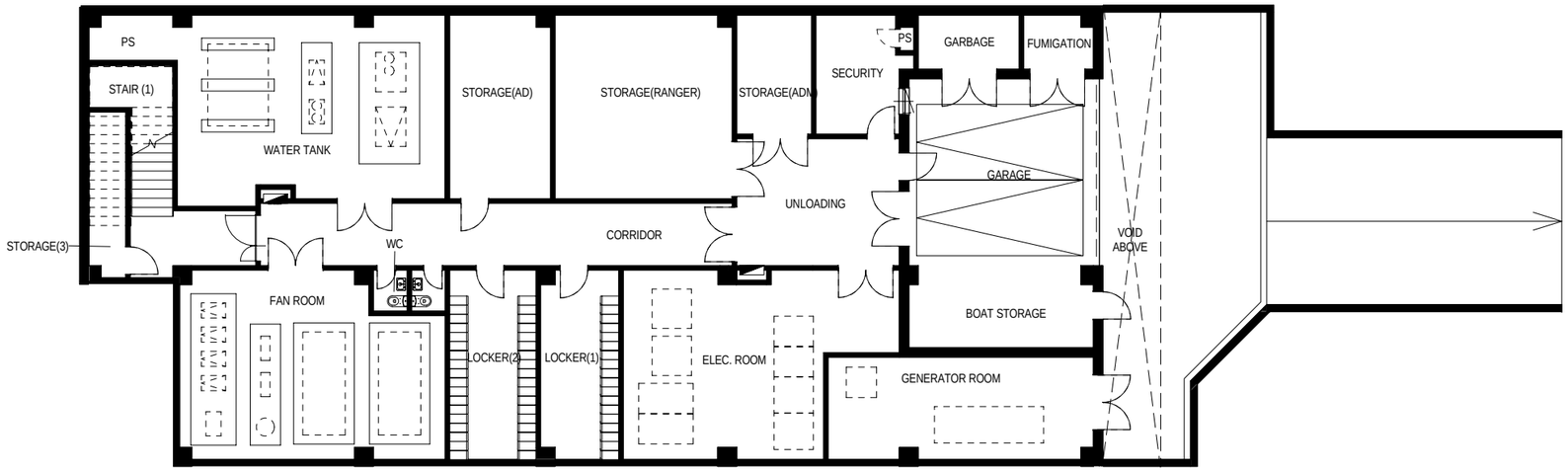
④ Elevations

⑤ Sections

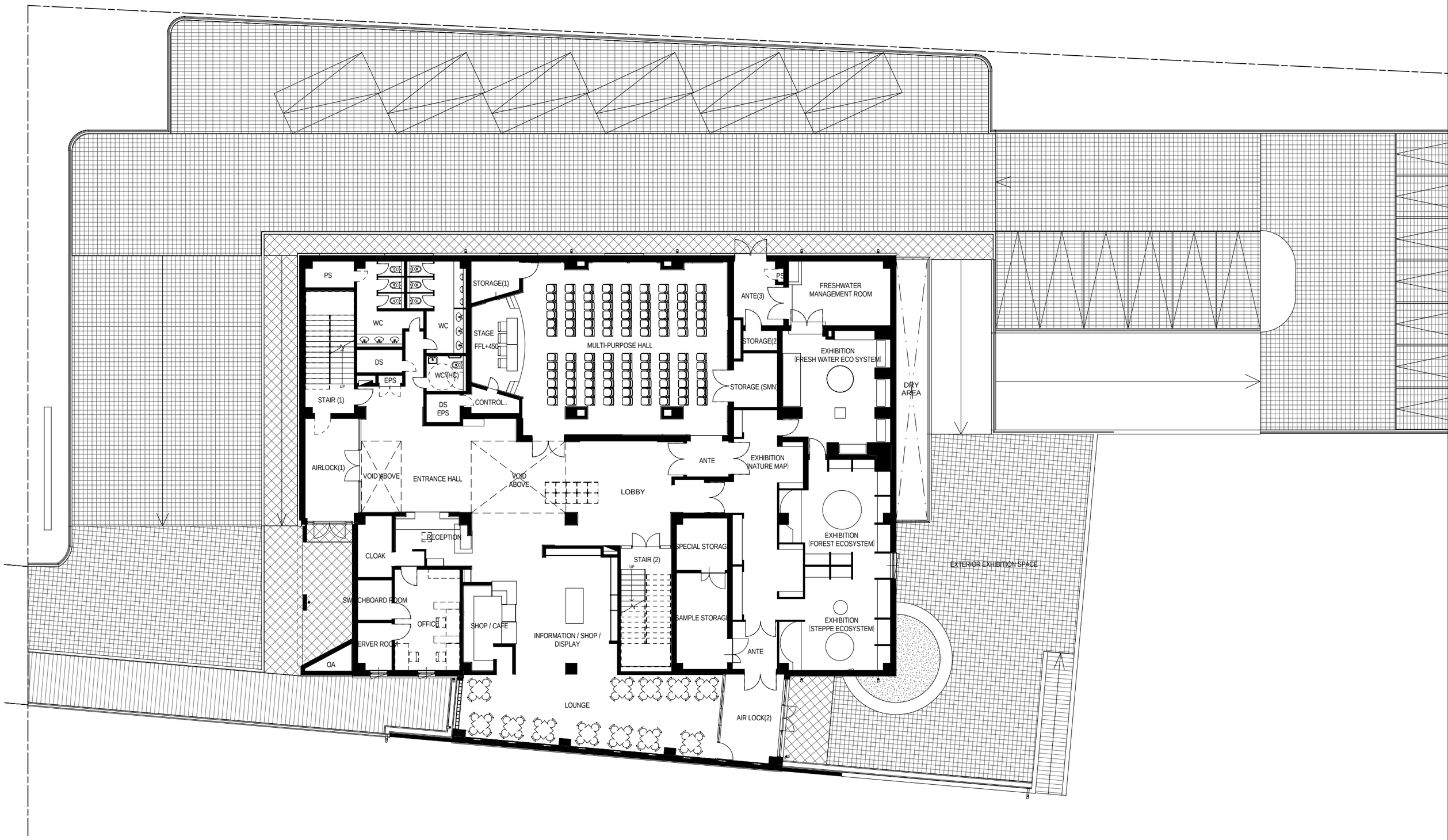
HEART OF ULAANBAATAR CITY



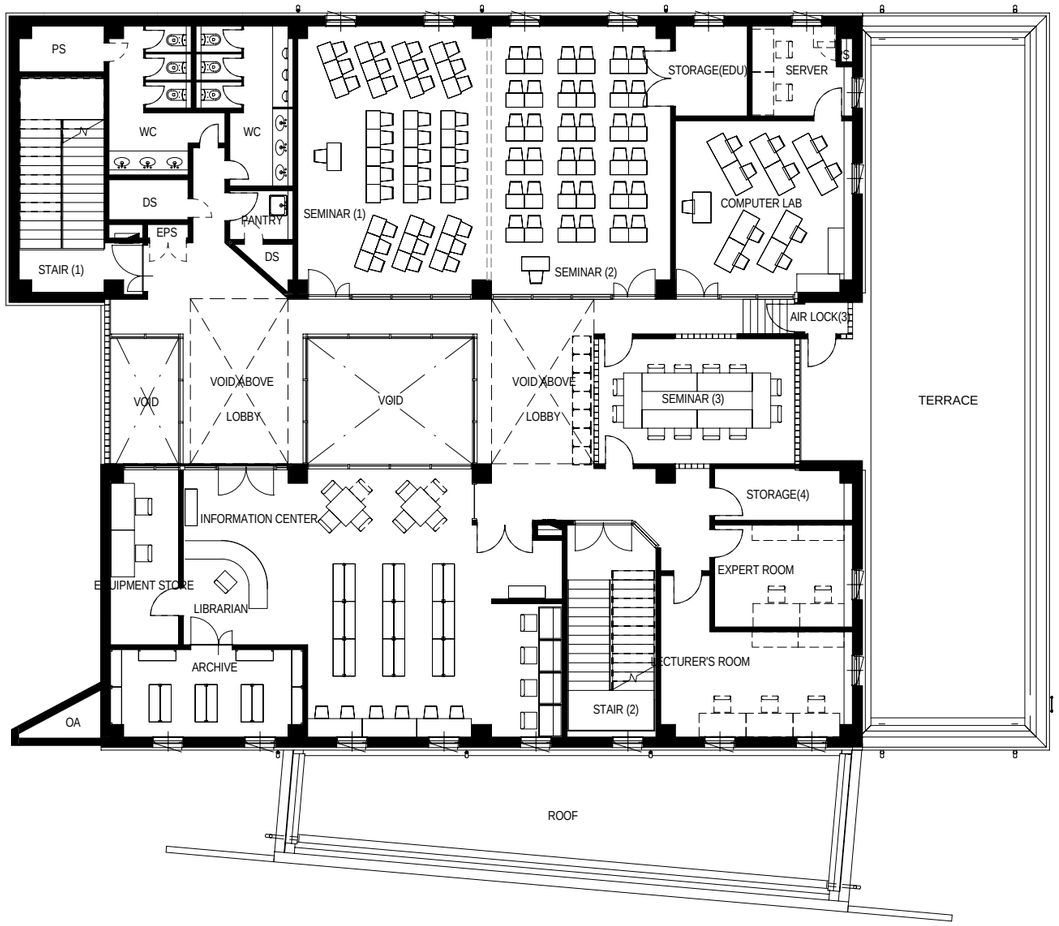
SITE PLAN 1:500



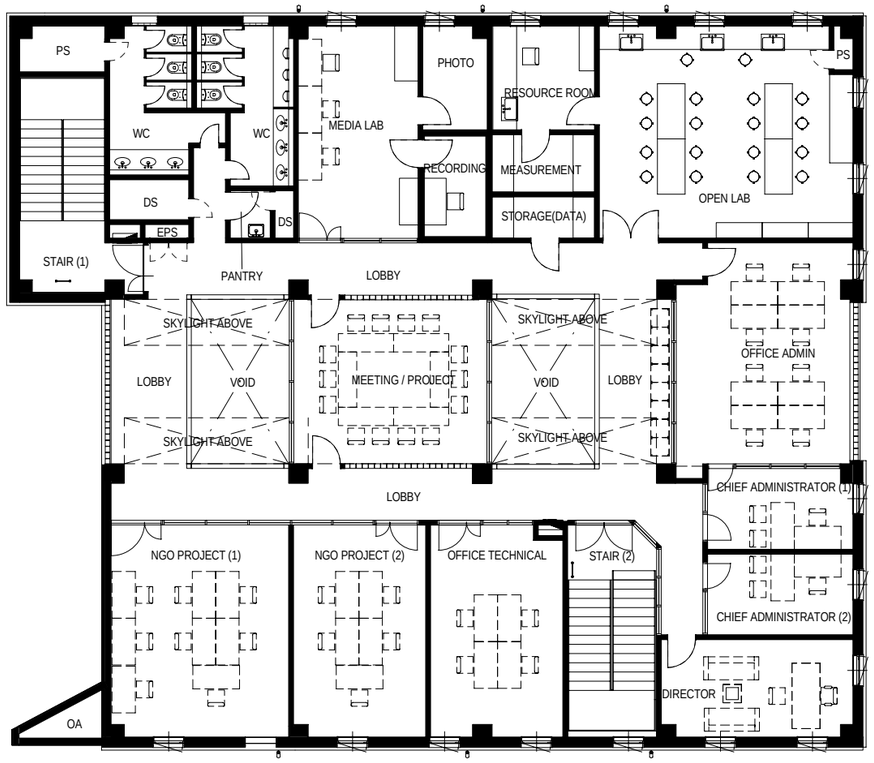
B1F FL. PLAN 1:200



GND. FL. PLAN 1:200



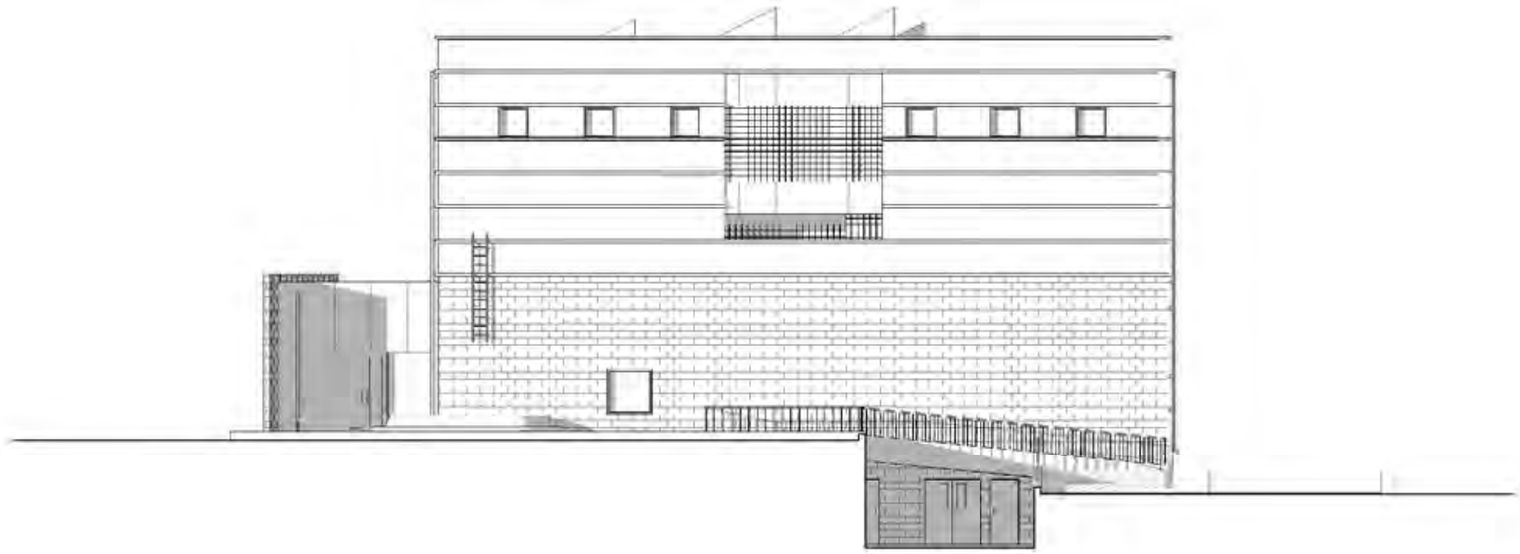
1st FL. PLAN



2nd FL. PLAN

1st & 2nd FL. PLAN 1:200

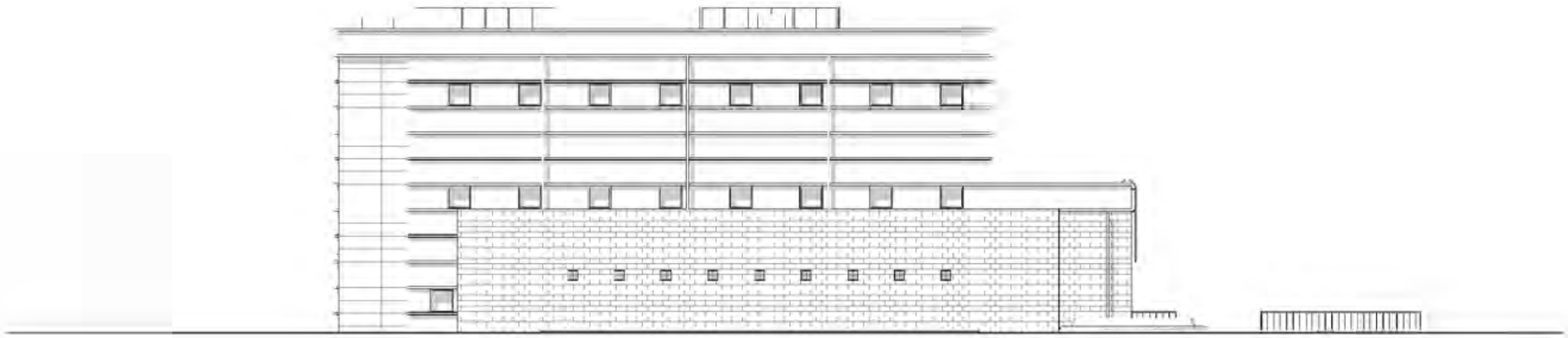
WEST ELEVATION



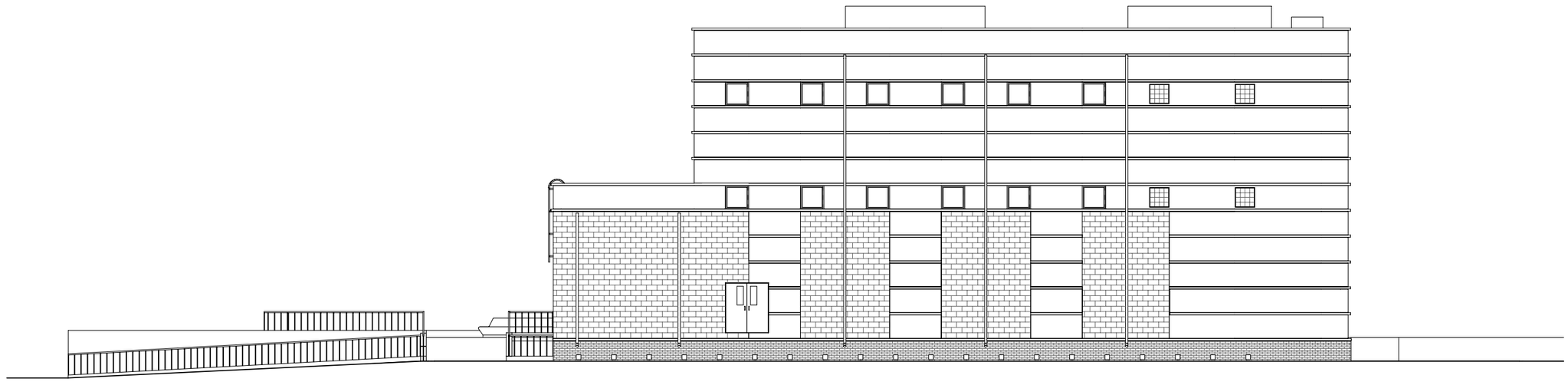
EAST ELEVATION

ELEVATION (1)

1:200

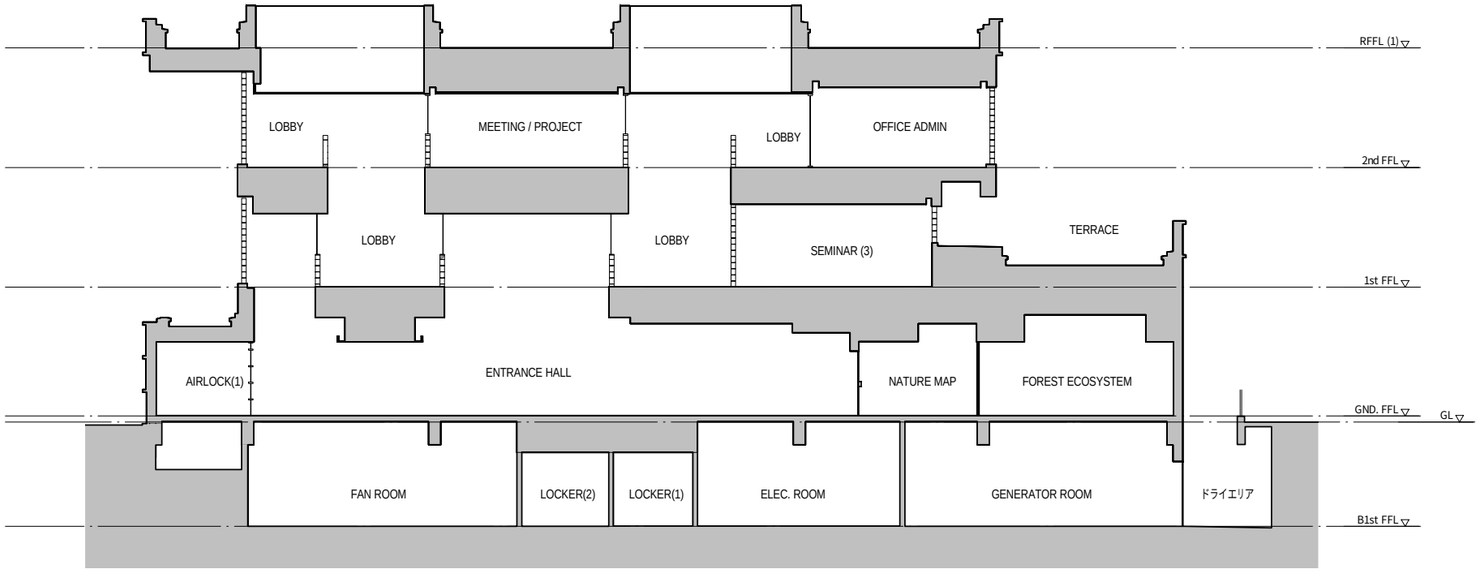


SOUTH ELEVATION

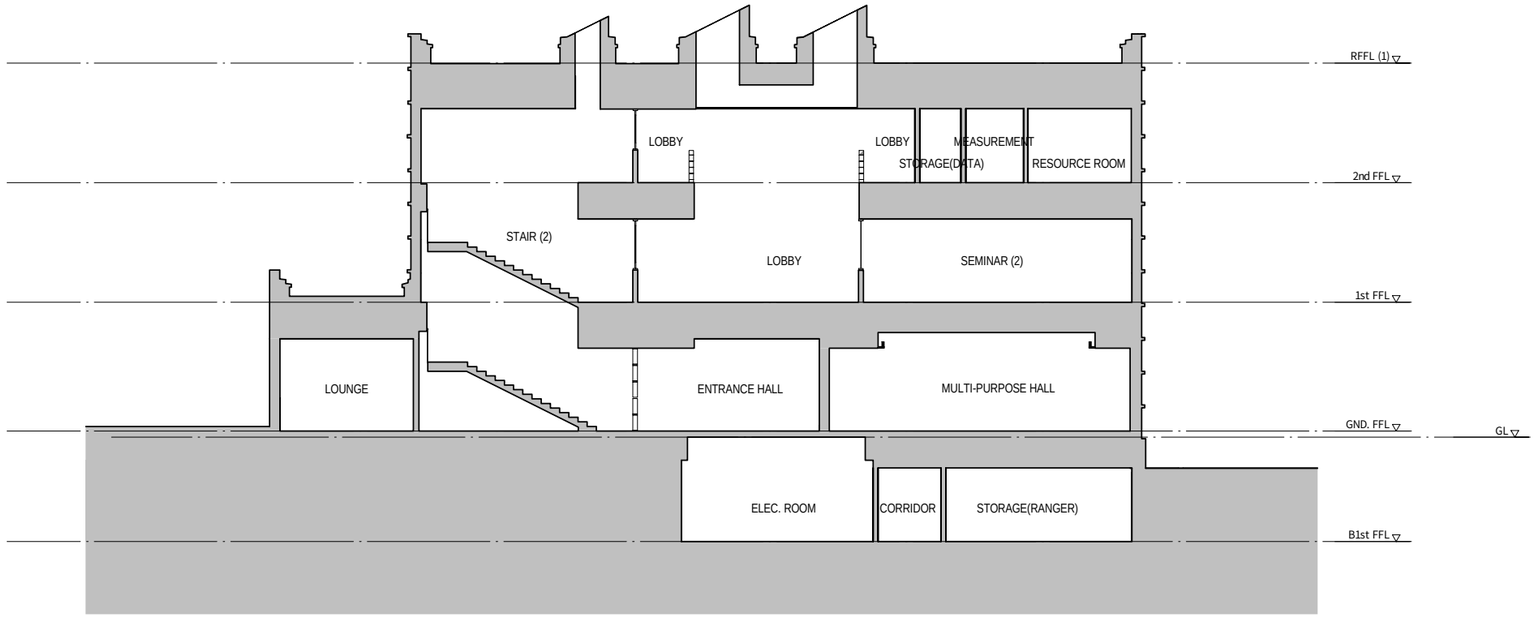


NORTH ELEVATION

ELEVATION (2) 1:200



SECTION (1)



SECTION (2)

SECTION 1:200

2-2-4 Implementation Plan

2-2-4-1 Implementation policy

This project consists of construction work and equipment procurement and installation work. The scope of Japan's cooperation is to be carried out within the framework of the grant aid scheme of the Government of Japan.

This project is to be officially implemented after the two governments approve the contents of the project, exchange notes regarding implementation of the project and a grant agreement (G/A) regarding the project is concluded between the Government of Mongolia (GOM) and JICA. After conclusion of the Exchange of Notes (E/N), the implementing agency of the project and a consultant in charge of the project are to conclude the consultant agreement for the project and the consultant will start the review of detail design, and preparation of tender documents of this project. Upon completing preparation of the tender documents, tender procedure will take place for selection of successful tenderers for the works. The respective successful tenderers, who are Japanese companies, will carry out the construction work and the equipment procurement/installation work.

(1) Organizations in Recipient Country

The following Mongolian authorities are the implementing agencies responsible for each task.

1) Responsible for the project: Ministry of Nature, Environment and Tourism (MNET)

This Ministry is to represent the Government of Mongolia in implementing the project.

2) Responsible for decision-making: MNET

MNET is to carry out all activities related to this project.

3) Other relevant organizations:

Mongol Academy of Science, National University of Agriculture, National Agency for Meteorology, Hydrology and Environmental Monitoring, Natural Environment related NGOs, etc. are to carry out activities in cooperation with the New Center.

(2) Consultant

After the E/N between the two governments takes place and the G/A between the GOM and JICA concludes, MNET will conclude a consultant agreement with a selected Japanese consultant in accordance with the Grant Aid scheme of the Government of Japan. The consultant is to carry out the following services

in accordance with the provisions of the consultant agreement.

1) Detail Design: Preparation of detail design documents (including specifications and other technical documents)

The consultant is to review the design of the facilities in detail based on the Basic Design and prepare tender documents including drawings, specifications, and instructions to tenderers and draft contracts in order to select a Japanese contractor and supplier.

2) Assistance of Tendering: Assistance of tendering to select the contractor and the supplier and concluding the contracts with the contractor and the supplier.

In implementing tenders, the consultant is to prepare advertisements for pre-qualifications, receive applications, screen applicants, deliver tender documents, receive tenders, and evaluate the result of the tender. The consultant is also to assist on conclusion of the construction contract and the equipment contract between the implementing agency and the contractor and the supplier, respectively, and report all these matters to the Government of Japan.

3) Supervision: Supervision of the construction work and the equipment work and of supplier's giving instruction on equipment installation/operation.

Supervision is a task to check to see whether or not the construction contractor and the equipment supplier are carrying out their respective works in accordance with the provisions of the relevant contracts, respectively, to ensure that the contracted obligations are properly fulfilled. In other words, it is to give the contractor and the equipment supplier instruction, advices and to coordinate their works for smooth implementation of the project. Details of supervision services are described below.

① Instruction, advice and coordination to the contractor and the supplier

The consultant is to examine the execution schedule, the execution plan, and the construction equipment and materials procurement/installation plan and to coordinate, give relevant instruction and advice to the contractor and the supplier.

② Examining and approving the shop drawings and the manufacturing drawings

The consultant is to examine, instruct and approve the shop drawings and the manufacturing drawings and other relevant documents submitted by the contractor and the supplier.

③ Verifying and approving the construction materials / equipment

The consultant is to verify and approve the construction materials and equipment proposed by the contractor and the supplier in compliance with the contract documents.

④ Factory inspection

The consultant is to inspect, when necessary, the building materials and equipment at the manufacturers' factories to ensure their qualities and performances.

⑤ Reporting the progress of the construction work

The consultant is to grasp the progress of the construction / equipment work and to report the progress of the construction / equipment work to the governments of the two countries.

⑥ Completion inspection and commissioning test

Upon completion of the construction / equipment work, the consultant is to conduct a final inspection and commissioning tests of the completed facilities and installed equipment to ensure that all the works are completed in compliance with the contract documents and then submit a certificate of completion of inspection to the Mongolian side.

⑦ Training for operation of equipment

Some equipment procured for this project requires expertise in operation, maintenance and management. It is, therefore, necessary that the contractor and the supplier give on site training to the local staff in charge of operation and repair of the equipment during the period of installation, adjustment and test-run period. The consultant is to give instruction and advice regarding the training program.

(3) The Contractor and the Equipment Supplier

The contractor is to construct the facilities and the equipment supplier is to procure, supply and install the equipment in accordance with the contract documents and give instructions for operation, maintenance and management of the facilities and the equipment to the Mongolian side. The supplier is to ensure after-sale services for obtaining Soft Component (Technical Assistance), procuring spare parts and consumables of major equipment without cost or at cost during the warranty period and to support the client with the assistance of manufacturers and their distributors in the country so that the client may receive pertinent instructions.

(4) Japan International Cooperation Agency (JICA)

JICA executes the Grant by making payments of the amount in accordance with G/A and pays serious attention to ensure the accountability on proper and effective use of the Grant for the project.

2-2-4-2 Implementation Conditions

(1) Construction Work

1) Building Code and Procedures for Obtaining Building Permits

Mongolia has a set of established standards for architectural planning and building construction. Following the completion of the detail design, MNET must notify the relevant authorities of implementing the project and submit detail design drawings, specifications, etc. Thereafter a technical conditions report will be issued. Further, building materials, equipment and other products must be of certified items by fire code and regulations of Mongolia.

2) Measures against Adverse Effects on the Neighborhood

Because the project site is situated within the PA, possible cause of adverse effects due to construction work need to be carefully eliminated more than for general city area. For this reason, all possible measures for reduction of construction related noises, vibrations, waste, and traffic congestion must be taken when planning an execution scheme for the project. In addition, because far eastern side of the project site is a meltwater stream from Mt. Bogdo, strict instructions/supervision will be given to avoid polluting the stream by construction waste.

(2) Equipment Work

1) Schedule Control

It is essential that the building contractor, the equipment supplier and the consultant establish mutual cooperation and the construction work and equipment work schedules be controlled in detail in mutual cooperation. Equipment to be installed in the newly constructed facilities, some items of which are large, and/or built-to-order, require careful coordination with the progress of the building work, e.g. timing of placement of order, installation, inspection, commissioning, initial operation instruction, etc.

2) Necessity of Engineer

In order to have the equipment provided under this project to functions properly and effectively,

mastery of proper management, handling, operation and maintenance is essential. Thus, it is necessary to dispatch professional engineers for installation, commissioning and initial operation instruction for those items. The following table shows necessity of installation, commissioning, and initial operation instruction by equipment.

2-2-4-3 Scope of Works

(1) Scope of Construction Work

1) Work under Japan's Grant Aid

① Construction of the building set forth in the Implementation Review Study Report

② Implementation of incidental works, e.g. electrical, air-conditioning (heater, ventilation), and plumbing works, in the facilities

③ Preparation of infrastructure (power supply, water supply and drainage systems, etc.) within the project site

④ Installation and removal of temporary work facilities such as fence, building material store, etc.

⑤ Payment of power, water and telephone charges used for construction

⑥ Transportation to Mongolia

⑦ Inland transportation in Mongolia

2) Work under the Government of Mongolia

① Securement and installation of exhibits

② Securement of the project site for the construction of the planned facilities

③ Removal of existing buildings, other structures, waste and trees in the project site which are likely to hinder the construction work

④ Landscaping work

⑤ Construction of boundary fences (if necessary)

⑥ Installation of high-tension cable up to the boundary

⑦ Extension of telephone line to the boundary and installation of lead-in wire up to the new building

⑧ Provision of water supply line, sewage line, and regional heating supply line up to the boundary

⑨ Provision of land for temporary site office, work area and materials storage shed, etc. during the

construction work

⑩ Provision of temporary power and water supply and connection of telephone line to the project site during the construction work

⑪ To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be borne by the Authority without using the Grant

⑫ Coordination with relevant authorities to facilitate smooth customs clearance of materials and equipment for the project

⑬ Support of personnel, who will execute the scope of Japanese side work, regarding necessary proceedings for staying in Mongolia

(2) Scope of Equipment Work (Procurement and Installation)

1) Work under Japan's Grant Aid

① Procurement, transportation, loading and unloading of the equipment to the project site

② Installation, adjustment and trial runs of the equipment

③ Explanation, operation and maintenance training for the equipment

2) Work under the Government of Mongolia

① Provision of temporary storage area for the equipment

② Construction of a temporary access road for motor vehicles bringing in equipment

2-2-4-4 Consultant Supervision

(1) Supervision Policy

In accordance with Japan's Grant Aid scheme, the consultant is to form a project implementing team to ensure smooth implementation of the project based on the basic design policy. The policies for construction supervision and equipment procurement supervision are stated below.

① To keep close contacts with the officials in charge of the project of both the governments to ensure completion of construction of the facilities and procurement of the equipment without delay

② To give prompt and proper instruction and advice with justice to the contractor, the equipment supplier and other concerned parties.

③ To give proper instruction and advice on equipment operation and management after installation and handover of equipment

④ To confirm completion of construction work and equipment work in compliance with the contract documents, to witness handover of the equipment and the buildings, and to conclude the consulting services by obtaining the consent of the Government of Mongolia.

(2) Supervision Plan

In view of the size of this project, the consultant is to dispatch a qualified engineer to the project site throughout the project implementation period. The consultant is to send other engineers to the project site on an as needed basis as the project progresses to conduct inspections, give instruction and act as coordinators. The consultant is to appoint an engineer in charge in its home office to establish a communication and support system for the site engineer. The consultant is also to report the progress of the project and matters to be arranged concerning the payment procedures, the completion and delivery of the construction and equipment works, etc. to all the parties concerned within the Government of Japan.

2-2-4-5 Quality Control Plan

As a rule, the consultant is to conduct construction supervision in accordance with the relevant Mongolian or Japanese standards as specified in the following table in order to ensure the prescribed quality level of the construction work.

Table 2-21 Quality Control Standards

	Main quality control standards			Remarks
	Item	Target value	Method of inspection	
Earthwork	Slope angle Accuracy of floor Height of groundwork Height of concrete sub-slab	Within range of target value Within range of +0 to 5 cm Within range of +0 to 3 cm Within range of ±1 cm	Slant gauge: visual inspection Level: visual inspection Same as above Same as above	The consultant is to have the contractor prepare an execution manual which describes examination items, target values, details of inspections, testing methods, curing methods, construction methods, etc. in advance. Monitorings and examinations are conducted during the construction by the Consultant
Reinforcing bar work	Thickness of cover concrete	Portion that does not come in contact with ground 30m/m Portion that comes in contact with ground Foundation 60m/m Other 40m/m	Visual inspection, measurement	
	Precision for cut & bending	Stirrup, hoop (permissible level ±5m/m Others ±10m/m		
	Tensile strength test	Test specimens: 2 reinforcing bars, each weighing 20 tons (on-site sampling)	Witnessing test conducted in the factory	
Concrete work (liquid concrete)	Compressive strength	Design strength210kg/cm^2 and over	3 test specimens x 3 types per 150m^3 per concreting (witnessing of test conducted)	
	Slump	15cm±2.5cm	Measured per concreting and per 150m^3 (witnessing of test conducted)	
	Chloride content	Less than 0.3 kg/m^3	Same as above	
Masonry	Compressive strength Other materials (cement, reinforcing bar)	40～70kg/cm^2	Witnessing test conducted by manufacturer Visual inspection	
Plaster work Painter's work Roof waterproofing work Finish carpentry	Material, method of storage, method of work, thickness of paint, curing, accuracy of work			
Water supply and drainage work	Water pipe Drain pipe	Pressure test High water level test	Witnessing/verifying of test	
Electrical work	Power cable	Insulation test Electricity conduction test	Same as above	

2-2-4-6 Procurement Plan

(1) Construction Work

1) Procurement of Equipment and Materials

Construction materials, such as cement, aggregate and reinforcing bars, are manufactured in sufficient quantities in Mongolia. However, the origin country of cement would also be China due to some case that the unstable quality of cement was found in present Mongolia. On the other hand, most of the finishing materials and construction machines are imported from Russia, China and East European countries. Some furniture, insulated windows and other items are manufactured by using imported machine tools in Mongolia. Most of the construction materials and equipment that are used widely in the country are in short supply and many products are imported for each project after the import procedures are followed. It is, therefore, necessary to select lighting fixtures and the like giving due consideration the availability of expendable and replacement parts. The following table shows the procurement sources of the construction materials and equipment for building, electrical, plumbing, and mechanical works for this project.

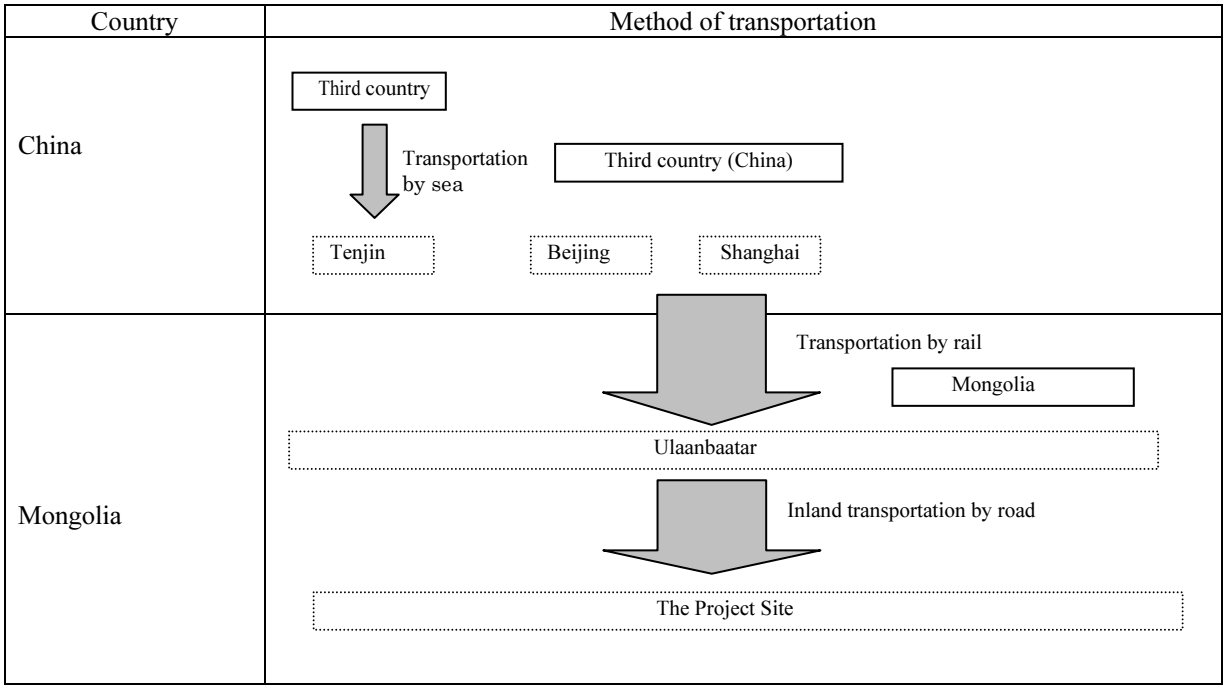
Table 2- 22 Procurement Sources of Materials and Equipment

Material/equipment		Procurement source	Remarks
Construction material	Cement	Mongolia, Third country	China could be the third country
	Sand, gravel	Mongolia	Domestic product
	Reinforcing bar	Mongolia, Third country	Both domestic & imported products are commonly used.
	Mold, lumber	Mongolia, Third country	Both domestic & imported products are commonly used.
	Metal furniture	Mongolia, Third country	Imported products are widely used but domestic products may be procured.
	Steel furniture	Third country	Imported products are widely used.
	Furniture fittings	Third country	Imported products are widely used.
	Brick for wall	Third country	Imported products are widely used.
	Floor tile	Mongolia, Third country	Imported products are widely used but domestic products can be procured.
	Paint	Mongolia, Third country	Imported products are widely used but domestic products can be procured.
Electrical equipment	Distribution board	Third country	Imported products are widely used.
	Lighting fixture	Third country	Imported products are widely used.
	Power cable pipe (rigid PVC pipe)	Third country	Imported products are widely used.
	Electric wire/cable	Mongolia, Third country	Imported products are widely used.
Air-conditioning equipment	Heating equipment	Third country	Imported products are widely used.
	Ventilating fan	Third country	Imported products are widely used.
Plumbing equipment	Pump	Third country	Imported products are widely used.
	Sanitary fixture	Third country	Imported products are widely used.
	Water supply pipe/drainage pipe (rigid PVC pipe)	Third country	Imported products are widely used.
	Water tank	Third country	Imported products are widely used.

2) Mode of Transportation

As Mongolia is a landlocked country, the main transportation is by land. As shown in the diagram below, Chinese products, which are one of the third country products, will be procured in Beijing or Shanghai and transported by rail to Ulaanbaatar. Other third country products will be transported to Tianjin by sea and to Ulaanbaatar by rail.

Under present circumstances, it is possible to procure almost products from China. Therefore, it is planned to procure all third country products in China.



3) Inflation Rate of Commodities

Inflation rate of commodities in Mongolia is constantly rising based on the local currency although its rate is unstable as shown below. Therefore, care must be taken to fix the currency rate for the project cost with due consideration of inflation rate trend.

Table 2- 23 Price Index of Commodities Price

Year	2005 (actual)	2006 (actual)	2007 (actual)	2008 (actual)	2009 (estimate)	2010 (estimate)
Rate(%)	12.457	4.486	8.167	26.806	8.5	7.9

(Source:IMF)

(2) Equipment Work

1) Equipment Procurement

In principal equipment, which does not require consumables or spare parts, will be procured in Japan. Regarding equipment that requires supplies of spare parts, consumables, and maintenance services of the manufacturer will be procured from manufacturers who have local distributors that can supply the above mentioned necessities in Mongolia. Possibilities of procuring third country products will be considered also. The equipment, which will be from the third country and require services by local distributors or branches are shown in Reference 7, Appendix-3 titled "Requirement of Local Distributors, Country of Origin, Country to be procured from, and Specifications of Requested Equipment"

2) Mode of Transportation

① Container transportation will be the basic method of transportation in light of the need to prevent theft and loss in transit.

② Equipment that is to be procured from Japan will be transported by sea from Japan to Tianjin, and will be transported by rail to Ulaanbaatar. They will then be transported by land to the project site.

③ Those which to be procured from the third country, namely China, will be transported by rail from China to Ulaanbaatar, and then by land to the project site.

④ Those, which to be procured in Mongolia will be transported by truck to the project site.

2-2-4-7 Operation Guidance Plan

(1) Adjustment, Commissioning (Checking Operations) Implementation Plan

8 engineers from Japan described in the Table below from 1. through 6. will execute the adjustment and commissioning (checking operation) separating in 6 Sections with equipment for laboratory, aquarium equipment, video conference set, simultaneous interpreter system, video edit system and wireless radios. And engineers from local distributor will execute the adjustment and commissioning for PC and copier machine following the installation work. 2 general workers will be allocated to each equipment section except the instruction for DVD edit system and wireless radios.

Table 2-24 Implementation Plan for Adjustment and Commissioning (checking operation)

Engineer	No. of Engineer planned	Days planned	Work Explanation
Japanese Engineer 1	1	1	Adjustment and test run work for Draft Chamber
Japanese Engineer 2	2	2	Adjustment and test run work for Water Circulation Aquarium
Japanese Engineer 3	1	1	Adjustment and test run work for Video Conference Set
Japanese Engineer 4	1	0.2	Adjustment and test run work for Simultaneous Interpreter System
Japanese Engineer 5	1	1	Adjustment and test run work for DVD Edit System
Japanese Engineer 6	2	1	Adjustment and test run work for Wireless Radios

1) Initial Operation Instruction Implementation Plan

7 engineers from Japan described in the Table below from 2. through 6. will execute the initial operation instruction separating in 5 sections with aquarium equipment, video conference set, simultaneous interpreter system, video edit system and wireless radios following the works of adjustment and commissioning (checking operation). And engineers from local distributor will execute the initial operation instruction for PC and copier machine following the work of adjustment and commissioning (checking operation).

Table 2-25 Initial Operation Instruction Implementation Plan

Engineer	No. of Engineer planned	Days planned	Work Explanation
Japanese Engineer 2	2	0.5	Initial operation instruction for Water Circulation Aquarium
Japanese Engineer 3	1	0.5	Initial operation instruction for Video Conference Set
Japanese Engineer 4	1	0.2	Initial operation instruction for Simultaneous Interpreter System
Japanese Engineer 5	1	1	Initial operation instruction for DVD Edit System
Japanese Engineer 6	2	0.5	Initial operation instruction for Wireless Radios

2) Operation Instruction Implementation Plan

Operation instruction shall be executed as per Table below separating 5 sections with aquarium equipment, video conference set, simultaneous interpreter system, DVD edit system and wireless radios.

Table 2-26 Operation Instruction Implementation Plan

Engineer	No. of Engineer planned	Days planned	Work Explanation
Japanese Engineer 2	2	0.5	Operation training for Water Circulation Aquarium
Japanese Engineer 3	1	0.5	Operation training for Video Conference Set
Japanese Engineer 4	1	0.3	Operation training for Simultaneous Interpreter System
Japanese Engineer 5	1	2	Operation training for DVD Edit System
Japanese Engineer 6	2	0.5	Operation training for Wireless Radios

2-2-4-8 Soft Component (Technical Assistance) Plan

(1) Confirmation of Objectives, Results and Performances

Soft Component (Technical Assistance) Plan will be carried out to the following stages to obtain efficiency and to build self-support & development capacity of the New Center.

Items to be confirmed regarding the objectives, results, and performances are as follows.

Contents	Objectives	Result	Items for Performance Confirmation
(1) Exhibition Activities Support	・Support planning exhibitions by the Mongolian side ・Execution of exhibitions for effective propagation ・Promote and securement of certain number of visitors ・Exhibit management	・The exhibits and stored items for permanent exhibition facility are confirmed	・Exhibition plan ・Number of visitors to the exhibitions
(2) Training and PR Activities Support	・Promote efficiency in training and PR activities .	・Inventory of A/V material is prepared. ・Schedule of showing A/V materials is prepared. ・Production plan of AV materials for training is prepared.	・Showing PR movies ・Production record of AV materials
(3) Operation and Management Activities Support	・Healthy operation of freshwater eco-system facility ・Planning of appropriate activities program	・Drafting plans of annual special activities programs ・Support of freshwater eco-system management	・Number of visitors ・Freshwater eco-system management record

(2) Manning Plan

Overall plan

Regarding the timing of implementation, in order to have the inputs in the most effective timing, it is planned that there will be two dispatches in the beginning, 1. Exhibition activities support, and at the end, 2. Training and PR activities support, and 3. Operation and management activities support, of the overall project schedule.

1. Exhibition activities support (The 1st Dispatch)
   In order to reflect the exhibition plan to the detail design, it will be implemented as soon as the E/N and G/A take place.

2. Training and PR activities support (The 2nd Dispatch)
   Aiming at smooth operation of the New Center after its opening, it will be implemented right after the completion.

3. Operation and management activities support. (The 2nd Dispatch)

Operation and management activities support of facilities and equipment will be implemented after completion of the support 2. and before the opening of the New Center.

1) Breakdown and Term

Exhibition, Training & PR Planning/Operation/Maintenance: 1 person

The ranking of the personnel will be decided after taking into consideration expertise required as previously described in the scope, be well aware of policy on natural environmental administration, possesses broad knowledge of eco-system, exhibition and operation. As for the period, the minimum number of days required to prepare the report and set period for preparation and conclusion before and after the field operations.

Duty	Rank	Memo	Term		M/M			
			2010	2012	2010		2012	
					LocalTotal	Japan Total	Local Total	Japan Total
Training, Exhibitionn Plan/Operation & Management	3	1st Assignment	(3) (22) (4)		17	3	5	4
Training, Exhibitionn Plan/Operation & Management	3	2nd Assignment		(3) (36) (4)	16	3	20	4

2) Timing

① 1st Assignment

At the time of concluding the consulting service agreement

Preparation period, on-site period and back home sort-out period are 3 days, 22 days and 4 days respectively.

② 2nd Assignment

Right after handover of the project

Preparation period, on-site period and back home sort-out period are 3 days, 36 days and 4 days respectively.

3) On-site Activities Itinerary (Draft)

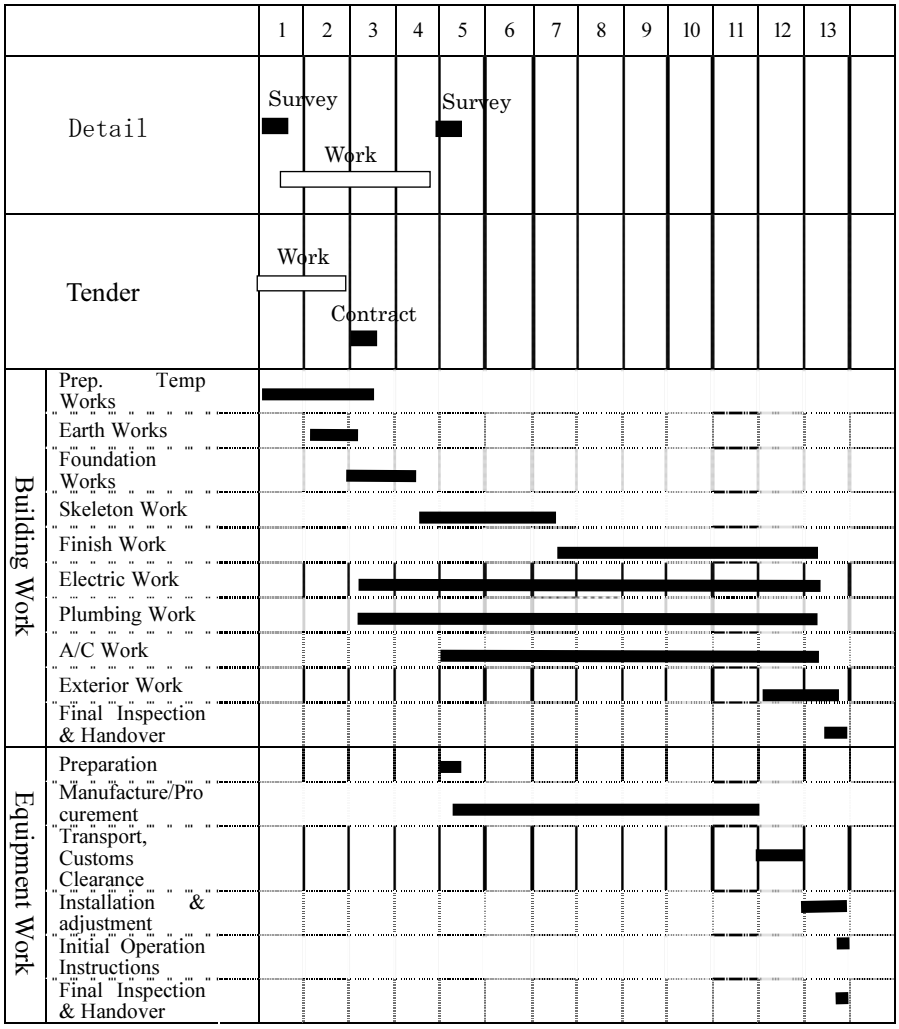
1st Assignment	
Days	Action
1	・Lv. Tokyo, Ar. Ulan Bator
2	・Discussion at JICA Mongolia Office ・Courtesy Call to MONET
3	・Explanation of overall plan/objectives to Working Group, Q&A at MONET
4	・Survey on Similar Facilities (Natural History Museum) ・Discussion w/ Mongolian Science Academy
5	・Planning disscussions w/ Exhibition in-charge
6	・Planning disscussions w/ Exhibition in-charge
7	・Preparation of a draft exhibition plan
8	・Document sorting
9	・Preparation of a draft exhibition plan
10	・Discussion w/ Exhibition in-charge on a draft exhibition plan
11	・Regular meeting of the working group on exhibition plan
12	・Planning discussions w/ Exhibition in-charge
13	・Planning discussions w/ Exhibition in-charge
14	・Preparation of exhibition plan
15	・Preparation of exhibition plan
16	・Preparation of exhibition plan
17	・Regular meeting of the working group on exhibition plan and training plan policy
18	・Discussion w/ Training in-charge ・Discussion w/ the Director of the New Center
19	・Discussion w/ Training in-charge ・Discussion w/ the Director of the New Center
20	・Report to MONET ・Report to JICA Mongolian Office
21	・Document sorting
22	・Lv. Ulan Bator, Ar. Tokyo

2nd Assignment	
Days	Action
1	・Lv. Tokyo, Ar. Ulan Bator
2	・Discussion at JICA Mongolia Office ・Courtesy Call to MONET
3	・Explanation of overall plan/objectives to Working Group, Q&A at MONET
4	・Discussion w/ Training & PR in-charge ・Discussion w/ the Director of the New Center
5	・Survey on Japan Center w/ Training & PR in-charge especially on training PR contents
6	・Planning discussion w/ Training & PR in-charge
7	・Planning discussion w/ Training & PR in-charge
8	・Document sorting
9	・Planning discussion w/ Training & PR in-charge
10	・Planning discussion w/ Training in-charge ・Preparation of a draft
11	・Regular meeting of the working group on training & PR plan
12	・Planning discussion w/ Training & PR in-charge
13	・Planning discussion w/ Training & PR in-charge
14	・Preparation of training and PR plan
15	・Preparation of training and PR plan
16	・Preparation of training and PR plan ・Preparation of Operation & Maintenance Plan
17	・Regular meeting of the working group on training & PR plan and Operaion & maintenance plan
18	・Discussion w/ the Director of the New Center
19	・Survey on maintenance condition of Japan Center w/ the Director of the New Center
20	・Discussion w/ the Director of the New Center
21	・Preparation of a draft of operation and maintenance plan w/ the Director of the New Center
22	・Document sorting
23	・Preparation of an operation and maintenance plan w/ the Director of the New Center
24	・Regular meeting of the working group for discussion on operaion & maintenance plan
25	・Discussion w/ the Director of the New Center
26	・Preparation of an operation and maintenance plan w/ the Director of the New Center
27	・Preparation of an operation and maintenance plan w/ the Director of the New Center
28	・Preparation of an operation and maintenance plan w/ the Director of the New Center
29	・Document sorting
30	・Preparation of an operation and maintenance plan w/ the Director of the New Center
31	・Regular meeting of the working group for discussion on operaion & maintenance plan and summing up the project
32	・Detailed discussions with the in-charges on exhibition, training and operation & maintenance
33	・Final report to MONET
34	・Report to JICA Mongolia Office
35	・Document sorting
36	・Lv. Ulan Bator, Ar. Tokyo

2-2-4-9 Implementation Schedule

When the two governments exchange notes on the implementation of the project, the construction work and the equipment work are to be carried out according to the following schedule.

Table 2- 27 Implementation Schedule



(1) Detail Design

After concluding the consultant contract with the executing agency, Ministry of Environment and Tourism of the Government of Mongolia, the consultant prepares detailed design drawings, specifications, specifications and other documents for tender based on the basic design study report. During this time, in consultation with the executing agency and relevant authorities of Mongolia, approval on the tender documents shall be obtained.

(2) Tender Assistance

A construction contractor and a equipment supplier will be selected by tender procedure. The order of the procedure is as follows, advertisement of tender, screening of applicants (prequalification), handing out of

tender documents and explanation of the documents, question-and-answer session, tendering, evaluation of tenders, and conclusion of contracts. Meanwhile, the project implementing agency in Mongolia is to proceed with the procedures for obtaining permits, such as land use permission, permission to build, issuance of business visas, etc. prior to the commencement of the project. The consultant is to support the implementing agency during this process.

(3) Building Work and Equipment Work

Judging from the details and sizes of the planned facilities and the local construction situation, it is expected that the period of implementation of this project, including installation of equipment, will be 13 months provided the procurement of construction materials and equipment progresses smoothly.

The commencement of the work is able to carried out after the middle of March when the frozen soil melts.

2-3 Obligations of Recipient Country

In implementing this project, the project implementing agency is required to undertake the following within the specified period of time:

(1) To obtain building permit prior to commencement of the construction work, (The project implementing agency must notify the relevant authorities of implementing the project and obtain building permit prior to commencement of the construction work.)

(2) To remove existing structures, waste, trees and other obstacles to the construction work,

(3) To implement exterior work such as landscaping and construction of gates, fences and guard house, The project implementing agency is to construct gates, boundary fences and (if needed) a guard house and to carry out landscaping.

(4) To provide the infrastructure, e.g. power supply, water supply, hot water supply, sewage and telephone lines, up to the boundary of the project site,

(5) To secure land for temporary office, work area, materials storage shed, etc. and to provide temporary power, water supply and telephone service to the project site for the purpose of construction work during the construction period,

(6) To operate, maintain and manage the facilities and equipment, the project implementing agency is to secure budgetary appropriations and staff members that are necessary for ensuring the proper and efficient use of the facilities constructed and equipment procured under this project.)

(7) To bear commissions, namely advising commissions of an Authorisation to Pay (A/P) and payment commissions, to a Japanese bank for the banking services based on the Banking Arrangement (B/A),

(8) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

(9) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in Mongolia with respect to the supply of the products and services under the verified contracts,

(10) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into Mongolia and stay therein for the performance of their work,

(11) To provide necessary permissions, licenses, and other authorisation for implementing the Project, if necessary

(12) To bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.

2-4 Project Operation Plan

(1) Staffing Plan

Number of staff for operation, maintenance and management of the New Center planned by the Mongolian side is 35, out of which 24 will be transferred from MNET and 11 new recruits. The expected activities to take place in the New Center are all currently being conducted except for feeding/breeding for the live fish exhibition. Therefore it can be done with the current technical level without any difficulties. As for the live fish exhibition, specialized personnel, who is an ex MNE staff, for feeding/breeding fish will be dispatched and, in addition, there are places where aquarium fish fed/bred in similar scale in the city, therefore it is deemed possible to have a live fish exhibition facility.

With regard to operation and management including training plan, exhibition plan and research activities, the Soft Component to improve efficiency has been requested. It is believed that the organizational strength will be reinforced in order to implement activities efficiently by implementing the requested assistance.

The following is the scheduled personnel organization chart.

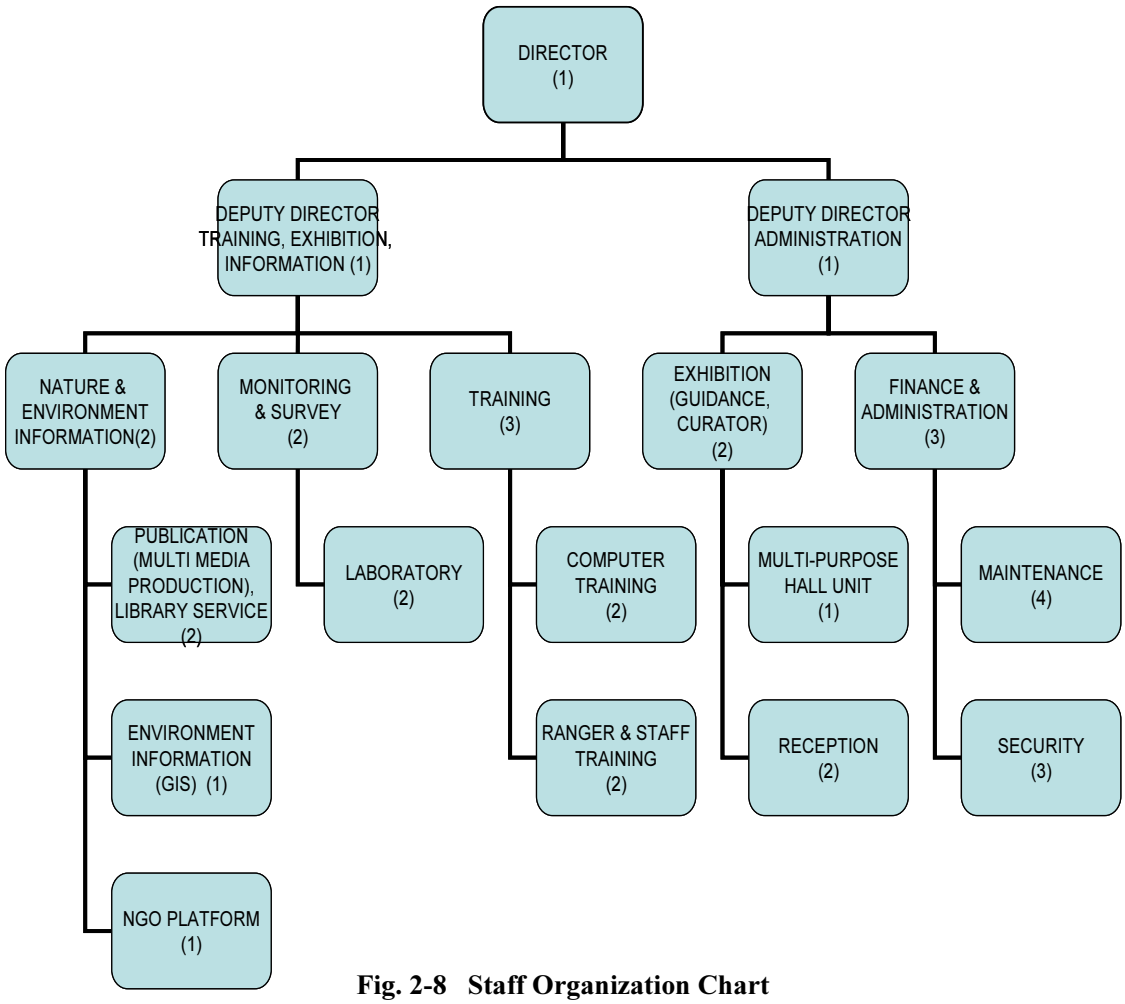


Fig. 2-8 Staff Organization Chart

Director, Deputy Director (Training/Exhibition/Information), Deputy Director (General Affairs), Natural Environment Information, Monitoring/Research, Training, Exhibition/Guide/Curator, Finance/Administration, Multimedia/library, Environmental Information, NGO in-charge, Laboratory, Computer Training, Staff/Leisure Training, Auditorium, Reception, Building and Repairing, Security.

(2) Maintenance and Management Plan

For maintenance and management of the facilities, there is no need for placement of specialized personnel because there is no sophisticated equipment requiring special knowledge and it is possible to outsource services as needed except for a technician for the aquarium. Therefore, placement of general maintenance staff for regular maintenance such as cleaning is sufficient.

It is essential to carry out periodical inspection, appropriate diagnosis of the condition of the building and equipment, and timely repair of defects in order to prevent unnecessary deterioration.

For this purpose, it is necessary to establish an operation & maintenance section that implements regular maintenance by planning appropriate repair scheme and method, and renewal, keeping purchase/repair records and by periodically reviewing operation & maintenance budget.

As the equipment needed management of maintenance and operation is planned to procure mainly from Mongolia, it is necessary to execute sequential maintenance management concluding the contracts for supply of consumables or the maintenance of each equipment with local agents.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Project Cost Borne by Mongolian Side

1)	Electricity, city water, sewerage, telephone incoming line installation	Tg 37.9 million
2)	Exhibition installation work	Tg 43.4 million
3)	Furniture and fittings	Tg 20.5 million
4)	Commission for banking arrangement and issuance of authorization to pay	Tg 3.3 million
	Total	Tg 105.1 million

(2) Conditions of Estimation

1) Estimated Date : December 2009

2) Exchange Rate : 1US$=93.97Yen

1 Tg = 0.063 Yen

3) Construction Period : Implementation period is within one Japanese fiscal year. The schedule for detail design, equipment procurement and building construction is as shown in the schedule.

4) Others : The Project will be implemented in accordance with the rules and regulations of Japan's grant aid.

2-5-2 Operation and Maintenance Cost

Estimated budget to ensure operation and maintenance of the New Center, which includes the salaries of the staff, cost for purchasing and repairing equipment, and utility costs, by MONET is 189.6 million Tg..

The 2010 fiscal budge of MONET is 26,743.2 million Tg. Therefore, it is judged that there will be no problem to secure the expected operation and maintenance cost for the New Center and MONET will be able to sufficiently support the cost. In addition, there is an additional plan of the self generated income to be added.

Expected budget to be secured for operation and maintenance of the New Center is as follows.

Table 2-28 Budget for the New Center

(Million Tg/Yr)

	Expenditure Item	Amount
1	Salary	137.5
2	Social Security	13.8
3	Utility	24.0
4	Operation & Maintenance	8.5
5	Staff one time allowance	5.8
	Total	189.6

2-6 Other Relevant Issues

In order to make the project further effective and efficient, it is essential to coordinate activities with the international organizations and NGOs, which are active in the field of natural environment conservation within Mongolia and to continuously receive support for operation of the New Center by the government of Mongolia.

Chapter 3. Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect

Current Situation & Issues	Measures to be taken under the Project	Direct Effects / Degree of Improvement	Indirect Effects / Degree of Improvement
1) Training/Seminar for the MNET officials and PA staff cannot be held enough due to lack of facilities.	• Training rooms and relevant laboratories will be provided.	1) Training and seminar for MNET officials and PA staff are being held. Training will be carried out more efficiently and economically owing to having specialized facilities equipped with appropriate equipment compared to renting ordinary rooms. New trainings 20 times/Yr. to 30 times/Yr. Training for environmental data will increase from 15 times/Yr to 24 times/Yr by using the Computer Room.	1) Management technique for Freshwater ecosystem and environmental conservation will improve. Management technique of the PAs and Environmental Monitoring technique will improve. Accurate interpretation of the laws and regulations based on correct knowledge will be obtained through participation of training and seminars.
2) There is little opportunity to educate the public and foreign tourists regarding nature conservation.	• Provision of facilities and equipment for training, exhibition, natural environment information center, PR data/teaching material preparation, open lab., freshwater management.	2) Dissemination activities will be implemented to educate the public and tourists on nature conservation. Promote awareness of natural environment through experience of open lab. watching movies and attending seminar on environmental issues, and seeing ecology map of Mongolia, nature conservation posters and live freshwater fish and so on. New seminars and events for the public and tourists 7 times/Yr. Number of visitors exhibitions 25,000/Yr.)	2) Data management technique will be mastered for administration of natural environment conservation. Data management technology of GIS mapping and of environmental data from 21 PA management office as well as 30 data collecting locations in 23 districts will be mastered.
		3) With implementation of the Soft Component Plan for the activity of seminar, information, and exhibition at the New Center, the quality and effectiveness of those activities will be upgraded.	3) Promotion of Environmental Awareness Project by NGOs 308 Environmental NGOs are currently registered with MNET. 80% of them are carrying out education and seminars on environmental conservation. The New Center will provide platform for such NGOs' activities thereby promoting education and dissemination of nature conservation to the public and tourists.

3-2 Recommendations

3-2-1 Recommendations and Issues to be Tackled by Mongolian Side

(1) The present situation of natural environment, including the freshwater ecosystems of Mongolia is facing a major crisis owing to climate change and wanton development. It is expected that demand for proper and effective administration of environmental conservation from both inside and outside of the country will increase from now on.

(2) Education and dissemination of nature conservation information to the public and tourists are very important activities for protection of nature in Mongolia. Effective promotion of activities is expected to have a strong impact in raising the level of awareness of the public. The exhibition department of the project, plans to exhibit the ecology of Mongolia and themes to promote awareness among the public and tourists. As a result, it is deemed that the New Center will provide valuable opportunities for more people to develop interest in the land of Mongolia and the importance of nature conservation. In order to do this, it is expected to provide interesting exhibitions all the time by closely cooperating with the National Museum of Natural History and the Mongolian Academy of Science.

(3) In addition to the above, an exhibition of live fish, which must be managed by experts in the field, is planned in the exhibition room. The operation procedure of the live fish aquarium will be explained before the handover of the New Center by the Japanese side. In conjunction with the above, the Mongolian side is expected to appoint a specialist at the earliest possible time.

(4) Completion of the project is scheduled to be April 2012. In order for the New Center to start operating smoothly, it is essential that the scope of work to be born by the Mongolian side, i.e. connection of electricity, water supply, sewer, regional heating hot water supply, and telephone line, be implemented according to the schedule.

3-2-2 Cooperation with Other Donors

One of the objectives of this project is to consolidate and centralize the unorganized scattered information regarding the natural environment within Mongolia and to openly publicize the information to the public. Some of the information has already been collected by the World Bank, UNEP, Holland and many other donors. Therefore, it is deemed that the project will be further enhanced by actively exchanging relevant information and technologies with those donors.

3-3 Validity of the Project

This project is deemed valid to implement as Japan's grant aid cooperation for the reasons below.

- It becomes possible to newly train a total of approx. 2,000/Yr. of the officials and staff of MNET and RAs, rangers and volunteer rangers in natural environment conservation activities in the New Center.
- It becomes possible to educate and disseminate information of natural environment conservation activities to a total of approx. 25,000/Yr. of the public and foreign tourists.
- The scheduled activities in the New Center do not require advanced technology and the existing technical level, personnel and scheduled budget are sufficient to implement the project. In addition, sustainable operation is deemed to be possible because rental of the facilities and admission to the exhibition rooms can be used for operation and maintenance.
- This project contributes to realization of the objectives prescribed in "the Mongolian Action Programme for the 21st Century, 1998", national policy of Mongolia on nature conservation and international treaty.

As stated above, it is expected that this project will have many advantageous effects as well as benefit the nature conservation of Mongolia. Therefore the validity of implementing Japan's grant aid cooperation to a part of the project is confirmed. In addition, in order to make the project further effective and efficient, it is essential to coordinate activities with the international organizations and NGOs, which are active in the field of natural environment conservation within Mongolia and to continuously receive support for operation of the New Center by the government of Mongolia

3-4 Conclusion

As stated above, it is expected that this project will have many advantageous effects as well as benefit the nature conservation of Mongolia. Therefore validity of implementing Japan's grant aid cooperation to a part of the project is confirmed. Further more, it is deemed that if the items specified in the "Recommendations and Issues" are implemented, this project can be more effective and efficient.

[Appendices]

1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in Mongolia
4. Minutes of Discussions (M/D)
5. Soft Component (Technical Assistance) Plan
6. Equipment Plan (Quantity by Request and Evaluation)
7. Review Table for Requested Equipment
8. Specification of Equipment, Procurement Source, Country of Origin and Necessity of Local Agent
9. IEE Notice
10. Technical Specifications (Infrastructure Design)

1. Member List of the Study Team

1. Member List of the Study Team (November 22, 2009 – December 5, 2009)

1.	Mr. Kazutoshi ONUKI	Team Leader	Resident Representative, JICA Mongolia Office
2.	Mr.Yasuyuki SATO	Coordinator	Program Officer, Paddy Field Based Farming Area Division Ⅱ, Rural Development Department, JICA
3.	Mr. Osamu SUZUKI	Project Manager/Project Operation Plan	Yamashita Sekkei Inc.
4.	Mr. Tadayoshi TSUMOTO	Architect/ Construction Procurement	Yamashita Sekkei Inc.
5.	Mr. Yuji NEMOTO	Equipment Engineer/ Procurement	ECHO Corporation

2. Study Schedule

2. Study Schedule

	Date	Officials		Consultants		
		Team Leader	Planning Manager	Project Manager / Project Operation Plan	Architectural Planner / Procurement and Cost Survey	Equipment Planner / Procurement and Cost Survey
				SUZUKI Osamu	TSUMOTO Tadayoshi	NEMOTO Yuji
1	Nov. 22（Sun.）			Narita to Beijing Beijing to Ulan Bator	Narita to Beijing ・Requesting for research of construction material costs	Narita to Beijing Beijing to Ulan Bator
2	Nov. 23（Mon.）		・Courtesy call on MONET ・ Discussion on the draft of Minutes of Discussion		Beijing to Ulan Bator ・Survey on local consultants	・Equipment market survey
3	Nov. 24（Tue.）	・Discussion on the draft of Minutes of Discussion		・Discussion on the draft of Minutes of Discussion ・Survey for the Mongolian National Tourism Center	・Survey for the Mongolian National Tourism Center	・Equipment market survey
4	Nov. 25（Wed.）	・Signing of Minutes of Discussion at MONET・MOF ・Report to EOJ, JICA office			・Survey for price fluctuation of construction material	・Equipment market survey
5	Nov. 26（Thu.）		Ulan Bator to Narita	・Visit to the project site	・Visit to Ogii Nuur Nature and Environment Center（Ulan Bator ⇔ Ogii Nuur）	・Survey on the condition of current equipment usage with MONET personnel ・Equipment market survey
6	Nov. 27（Fri.）	・Report to EOJ		・Survey on achievements of researches ・Report to EOJ		・Transportation company survey
7	Nov. 28（Sat.）			・Site Survey		・Collecting cost estimates
8	Nov.29（Sun.）			・Visit similar facilities within the city	Ulan Bator to Beijing	Ulan Bator to Narita
9	Nov. 30（Mon.）			・Survey on achievements of researches	・Collecting cost estimates of construction materials	
10	Dec. 1（Tue.）			・Collecting cost estimates of construction material and equipment Ulan Bator to Beijing	・Collecting cost estimates of furniture and display equipments	
11	Dec. 2（Wed.）			・Survey on the market statistics Beijing to Narita	Beijing to Shanghai	
12	Dec. 3（Thu.）				・Collecting cost estimates of construction materials and shipping	
13	Dec. 4（Fri.）				・Collecting cost estimates of construction materials and shipping	
14	Dec. 5（Sat.）				Shanghai to Narita	

MONET: Ministry of Nature, Environment and Tourism　　MOF: Ministry of Finance

3. List of Parties Concerned in Mongolia

3. List of Parties Concerned in Mongolia

Ministry of Nature, Environment and Tourism

Minister of Nature, Environment and Tourism	The Hon. GANSUKH Luimed
Head of the Secretariat of Minister	Mr. DAMDIN Terendash
Director, State Administration & Management	Mr. BYAMBAA Dorjkhand
Senior Officer, Information , Monitering and Evaluation Dept.	Mr. S. Tsogtsaikhan
Director, Special Protected Area Administration Dept.	Dr. NAMKHAI Ayush
Officer, Information , Monitering and Evaluation Dept.	Ms. B. Bulganmaa
Head, Sustainable Development & Strategic Planning Dept.	Ms. D. Tsetsgee
Officer, Sustainable Development & Strategic Planning Dept.	Ms. B. Sarantsetseg
Bogd Khan Mountain Strictly Protected Area Ranger Office	Mr. GANZORIG CH.

Mongolia National Tourism Center

Exective Director	Dr. PUREVSUREN Gombosuren
Deputy Director	Mr. MOLOR Namsrai
Marketing Director	Mr. SUKHBOLD Tserennavaan

Mongolian Academy of Science, Institute of Geoecology

Doctor	Dr. ERDENEBAT. M

Ministry of Finance, Department of Policy and Coodination for Loans and Aid

Specialist, Department of Policy and Coodination for Loans and Aid	Mr. B. Tuguldur

Embassy of Japan in Mongolia

First Secretary	Takahiro ISHIZAKI
Second Secretary	KATO YOSHIKO

JICA Mongolia Office

Resident Representative	Mr. Yukio ISHIDA
Assistant Resident Representative	Ms. Kazue MINAMI
Program Officer	Ms. B. TUGULDUR

4. Minutes of Discussions (M/D)

MINUTES OF DISCUSSIONS
ON IMPLEMENTATION REVIEW STUDY
ON THE PROJECT FOR CONSTRUCTION OF THE CENTER FOR FRESHWATER RESOURCES AND NATURE CONSERVATION IN MONGOLIA

In November 2009, the Japan International Cooperation agency (hereinafter referred to as "JICA") dispatch an Implementation Review Study Team (hereinafter referred to as "the Team") on the Project for Construction of the Center for Freshwater Resources and Nature Conservation in Mongolia (hereinafter referred to as "the Project"). The Team headed by Mr. Kazutoshi ONUKI, Senior Representative, JICA Mongolia Office was scheduled to stay in Mongolia from 22nd November to 1st December 2009.

The Team held a series of Discussion with the officials concerned of the Government of Mongolia and conducted a field survey at the study area.

In the course of discussion and field survey, both sides confirmed the main items described on the attached sheets. The Team will proceed to further works and report the findings to the Government of Japan.

Ulaanbaatar, 25th November, 2009

Mr. Kazutoshi ONUKI
Leader
Implementation Review Study Team
Japan International Cooperation Agency
Japan

Mr. BYAMBAA Dorjkhand
Director
Department of State Administration and Management
Ministry of Nature, Environment and Tourism
Mongolia

Mr. KHURENBAATAR Baavgai
Director-General
Department of Development Financing and Cooperation
Ministry of Finance
Mongolia

ATTACHMENT

1. Component of the Project

Both sides confirmed that final Basic Design component is as shown in ANNEX-1.

2. Japan's Grant Aid Scheme

The Mongolian side reconfirmed the Japan's Grant Aid Scheme explained by the Team, as described in ANNEX-2 and ANNEX-3.

3. Schedule of the Study

JICA will complete the final report taking a result of the last study in account and send it to the Government of Mongolia by the end of April, 2010.

4. Other Relevant Issues

4-1 Change of the Project title

The Mongolian side agreed the change of the Project title from "The Project for Construction of the Center for Management of Eco-System of Freshwater Resources and Nature Conservation" to "The Project for Construction of the Center for Freshwater Resources and Nature Conservation".

4-2 Organizational structure of the Ministry of Nature, Environment and Tourism

The Mongolian side submitted organizational structure authorized by the Cabinet to the Team as attached ANNEX-4. And Mongolian side explained that the Center for Freshwater Resources and Nature Conservation will be managed under the Department of State Administration and Management of the Ministry of Nature, Environment and Tourism.

4-3 Implementing body for the Project

Both sides reconfirmed that the Project will be implemented by the Working Group appointed by the Ministry of Nature, Environment and Tourism.

The Mongolian side submitted the member list of the Working Group to The Team as ANNEX-5 .And Mongolian side explained that they ensured a complete briefing of results of previous discussions on the Project between both sides to the Working Group.

4-4 Undertaking by the Government of Mongolia

1) Removal of obstacles at the Project site

The Mongolian side promised that there shall be no obstacles in the Project site until the construction starts.

2) Improvement of basic infrastructure

Regarding to preparation of basic infrastructure for the Project, in accordance with technical specifications issued by authorities, it is confirmed that Mongolian side shall provide essential infrastructures to the Project site by July 2011, which include the followings;

-water supply
-sewer line
-telephone line
-electrical power supply
-hot water supply for heating system

3) Environment and social consideration

The Mongolian side explained that a result of IEE which is submitted by the Mongolian side to JICA in April 2009 is valid until construction is completed.

4-5 Schedule of the Project

The Japanese side explained that a detailed schedule of construction work will be decided after the Exchange of Notes and the Detailed Design Study.

The Mongolian side strongly requested the Japanese side to avoid further delay of the Project. The Minister for Nature, Environment and Tourism proposed the early completion of construction so as to conduct the opening ceremony of the Center on the World Day for Water, March 22, 2012 as shown in ANNEX-6.

The Japanese side replied that the Team will report the Mongolian side's request to the Government of Japan.

ANNEX-1 Components of the Project
ANNEX-2 Japan's Grant Aid
ANNEX-3 Major Undertaking to be taken by Each Government
ANNEX-4 Organizational structure of the Ministry of Nature, Environment and Tourism
ANNEX-5 Member list of the Working Group
ANNEX-6 Letter from the Minister to JICA

10

ANNEX -1

Components of the Project

Table 1 Building Plan

Dept.	Facility Name	Function and Usage
Training (1F /2F)	Multi-purpose Hall cum AV hall, program exhibition room, and seminar rooms	· Suitable for seminars using multi-media materials as well as training for the public, · Seminars held by donors and foreign NGOs · Can be used for international conferences on environmental issues · Can be used as the program exhibition room by storing away chairs · 108 seats
	Seminar Room (1), (2) cum Ranger Training Room	· Training for MNET and related organizations' officials and practical drills for rangers · Can be used as one 75-seat room or two 36-seat rooms by using sliding wall
	Seminar Room (3)	· Used for a small group training/seminar of maximum 12 people · Used as a small group discussion or study room during a training session
	Computer Lab. cum Environmental Map Preparation Room	· Capacity: 10 persons + one lecturer · Mainly used for training of local officials who are involved in environmental research · Used for operations training of map data procession software and environmental information management software · Can also be used for making environmental map related materials by using GIS and the like
	Lecturers' Room	· Shared preparation room used by four lecturers
	Training Equipment Storage	· Used for storing chairs of the Auditorium for the training room to be of multi-purpose usage such as holding program exhibition
	Teaching Material Storage	· For the use of storing teaching materials
	Experts' Room	· A room for short-stay visiting experts who assist in training and other activities of the New Center
	NGO Project Room (1), (2)	· Workroom for environmental NGOs
Exhibition (1F)	Permanent Exhibition Room (Consists of four departments; ①Mongolian Eco-system Map, ②Steppe Eco-system, ③Forestry Eco-system, ④Freshwater Eco-system)	· Specifications and details of the room depend on the exhibition program. List of exhibits and exhibition programs must be issued by Mongolia in order to carry out detail design. · Exhibits and exhibition panels are to be borne by Mongolian side and exhibition cases, tables and lightings by Japan side.
	Sample Storage cum workshop for preparation of exhibits and specimens	· Preparation for exhibitions and processing specimens · Storing miscellaneous items for exhibition and consumable items such as exhibition panels, display lightings
	Special Storage	· Storing items that require a controlled environment such as stuffed animal specimens and preserved plants · Providing minimum required size for storing exhibit replacement but not for storing research purpose specimens
	Exhibition Entrance Hall	· To exhibit environmental protection activities, overseas cooperation on environmental projects by placing temporary exhibition walls. (assuming to use panels)
	Fumigation Room	· To fumigate plants and stuffed animals
	Lounge/Anteroom	· Lounge for exhibition area sharing functions such as exhibits delivery route, passage to outdoor exhibition area and emergency exit
	Exterior Exhibition Space	· Outdoor paved area, also used for Ranger's outdoor training · Exhibits to be provided by Mongolia

Dept.	Facility Name	Function and Usage
Natural Environment Information Center (2F)	Information Center	· Library, Video/PC Corner, Librarian's counter · Reading area for printed information · Viewing video library; videos, CDs, DVDs, and visual training record, etc. · Computer for information searching
	Equipment Storage cum librarian's office	· Install a server to store publicity material, educational material data, recorded videos of training being carried out.
	Archive	· Store PR and educational materials as well as published materials.
PR Data / Teaching Material Preparation (3F)	Media Lab.	· Simple publishing and AV material preparation takes place, e.g. from data collection, editing, printing to simple bookbinding. · High grade printing will be outsourced
	Photo Booth	· Photo booth for small sample photo shootings only will be provided
	Recording Booth	· Soundproofing booth for narration recording for video editing will be provided but not a broadcasting studio.
	Storage (Data) cum General Storage & Book Storeroom	· A general storage cum book storage to store data
Freshwater Ecology Management (1F)	Freshwater Management Room	· A backup exhibition aquarium and relevant equipment are to be installed with a direct access to the Freshwater Ecology Exhibition room. · Store relevant breeding equipment for exhibition.
	Anteroom	· To be used as a carrying-in route of live fish.
	Storage	· To store work tools
Open Lab. (3F)	Open Lab.	· Train Rangers and NGO staff for environmental research
	Resource Room	· Store expensive equipment
	Measurement Room	· Provided for use of precision measuring devices
Administration	Garage cum Unloading Area	· Indoor parking space for two official vehicles is provided to prevent damage during winter.
	Office	· The size of the office is decided based on the organization chart of the Center in the operation and management plan of the Center.
	Storage (Ranger)	· To store mainly outdoor use equipment such as tents and stretchers.
	Meeting Room	· One meeting room of 16 seats is planned for research and administration purposes. When necessary, one of the training rooms can also be used for this purpose.
	Reception Office	· Functions as the guide of the New Center, guide to the protected area, sales of exhibition tickets. Equipped with a P/A system
	Information / Shop /Display	· Occupies a part of main lobby
	Lounge	
	Office	· Equipped with a fire alarm panel, relevant alarm panels, and an emergency P/A system
	Machine Rooms	· A/C machine room, reservoir tank room, substation, generator room, pump room and MDF room
	Server Room	· Equipped with equipment for a LAN system within the Center
	Unloading Area	
	Stairs, Hallway, Hall, General Storage	
	Toilets, Toilets for Disabled	
	Pantry	
	Garbage Room	
	Storage (Adm)	· To be used to store facilities maintenance tools and consumables, etc.
	Locker Rooms	· For the use of staff and trainees
	Boat Storage	· To be used to store rubber boats
Outdoor Facilities	Visitors Parking	
	Staff Parking	
	Vestibule	

Table 2 Major equipment

Group	Equipment	Usage	Quantity
Study & Training	Rubber boat	For monitoring and observation in river and lake	1
	Wireless radios	For communication and liaison among rangers	1 set
	Echo finder	For measuring of fish shoal, water depth, and topography of river and lake bottom	1
	Draft Chamber	For prevention of contamination of hazardous gas and exhaust from volatile substance	1
	Autoclave	For sterilization of experiment equipment	1
	Laptop computer	For projector operation	3
	Desktop computer	For computer training	18
	DVD edit system	For edit and production of DVD image	1
Education & Dissemination	Plastic tank	For transportation of caught live fish for exhibition	1
	Water circulation aquarium	For exhibition of live fish (endangered species)	1
	Water circulation aquarium	For exhibition of live fish (precious protective species)	1
	Water circulation aquarium	For exhibition of live fish (large fish)	3
	Water circulation aquarium	For exhibition of live fish (middle and small fish)	1
	Simultaneous interpreter system	For international conference	1 set
	Video conference set	For conference with remote places and image run	1 set
	Digital printer	For printing reference data and pamphlet	1
	Copier machine	For copying and distribution of related data	2
Common	Chair with small table	For trainee	108
	A set of equipment for computer network	For establishment of network in the building	1 set

Table 3 Technical Assistance by the Consultant

Contents	Objectives	Result	Performance Indicator
(1) Exhibition Activities Support	· Support planning exhibitions by the Mongolian side · Execution of exhibitions for effective propagation · Promote and securement of certain number of visitors · Exhibit management	· The exhibits and stored items for permanent exhibition facility are confirmed	· Exhibition plan · Number of visitors to the exhibitions
(2) Training and Enlightenment Activities Support	· Promote efficiency in training and PR activities	· Inventory of A/V material is prepared. · Schedule of showing A/V materials is prepared. · Production plan of AV materials for training is prepared.	· Showing PR movies · Production record of AV materials
(3) Operation and Management Activities Support	· Healthy operation of the center · Planning of activities program	· Drafting plans of annual special activities programs · Support of freshwater eco-system management	· Number of visitors · Freshwater eco-system management record

JAPAN'S GRANT AID

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as part of this realignment, JICA was reborn on October 1, 2008. After the reborn of JICA, following the GOJ, Grant Aid for General Project is extended by JICA.

Grant Aid is non-reimbursable fund to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japanese Grant Aid is conducted as follows-

- Preparatory Survey (hereinafter referred to as "the Survey")
  - The Survey conducted by JICA
- Appraisal &Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Determination of Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide a basic document necessary for the appraisal of the Project by JICA and the GOJ. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

KO

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

The Report on the Survey is reviewed by JICA, and after the appropriateness of the Project is confirmed, JICA recommends the GOJ to appraise the implementation of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the E/N will be singed between the GOJ and the Government of the recipient country to make a plead for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

The consultant firm(s) used for the Survey will be recommended by JICA to the recipient country to also work on the Project's implementation after the E/N and the G/A, in order to maintain technical consistency.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by

JICA. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as ANNEX-3.

(6) "Proper Use"

The Government of recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

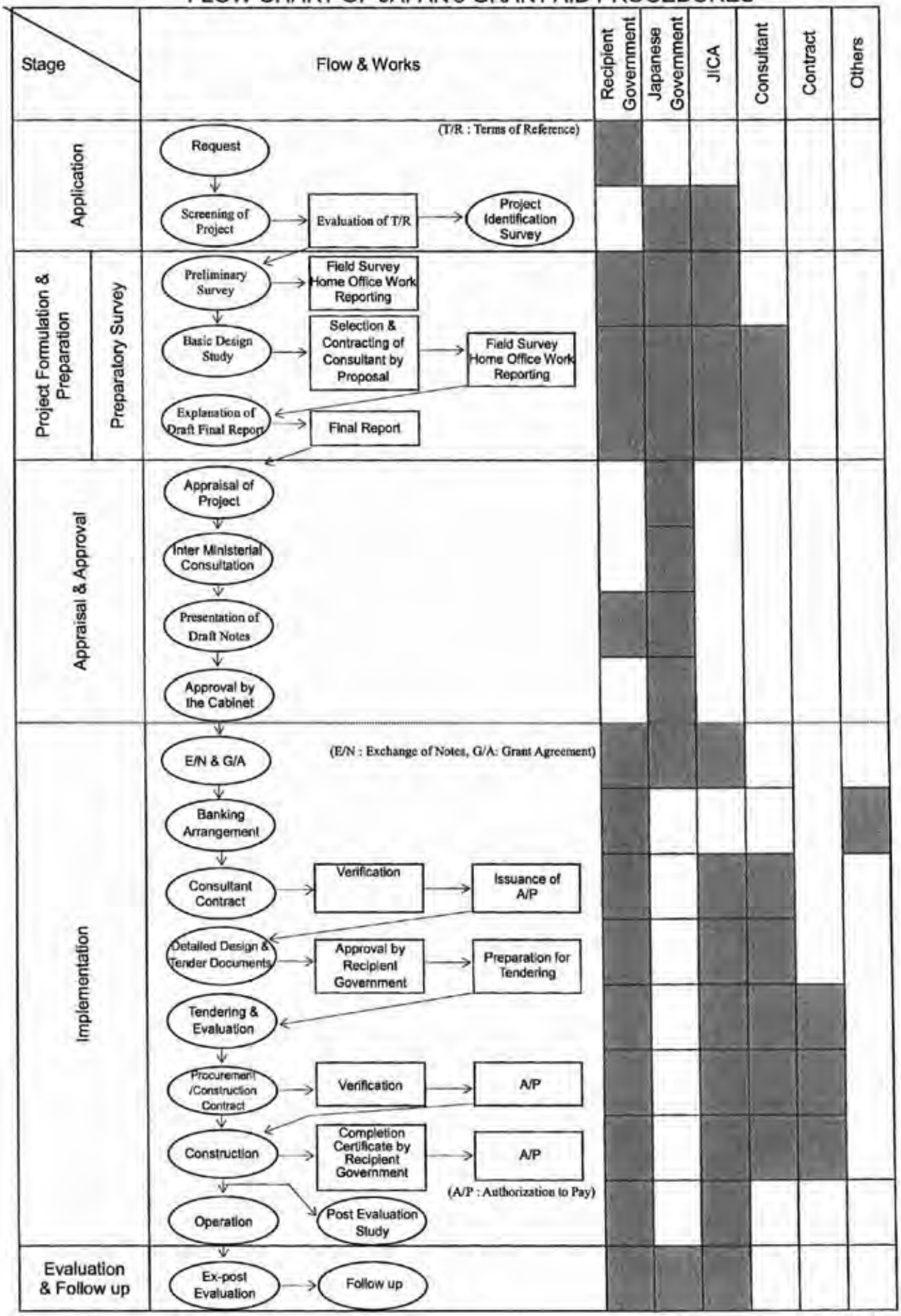
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

(10) Social and Environmental Considerations

A recipient country must ensure the social and environmental considerations for the Project and must follow the environmental regulation of the recipient country and JICA socio-environmental guideline.

(End)

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Major Undertaking to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Mongolian Side
1.	To secured land		●
2.	To clear, level and reclaim the site when needed		●
3.	To construct gates and fences in and around the site		●
4.	To construct the parking lot	●	
5.	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6.	To construct the buildings	●	
7.	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Hot water supply system		
	a. Hot water distribution main to the site		●
	b. The hot water supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8.	To bear the following commissions to the Japanese bank for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9.	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance for the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10.	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contact, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
11.	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		●
12.	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13.	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		●

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ORGANIGRAM OF THE MNET

ANNEX-5

МОНГОЛ УЛСЫН БАЙГАЛЬ ОРЧИН, АЯЛАЛ ЖУУЛЧЛАЛЫН САЙДЫН ТУШААЛ

2009 оны 04 сарын 15 өдөр Дугаар 98 Улаанбаатар хот

Ажлын хэсэг байгуулах тухай

Япон-Монгол Улс хоорондын буцалтгүй тусламжийн хүрээнд Цэнгэг усны нөөц, биологийн төрөл зүйлийн төвийг барьж байгуулах протоколыг үндэслэн ТУШААХ нь :

1.Япон улсын буцалтгүй тусламжийн хүрээнд Цэнгэг усны нөөц, биологийн төрөл зүйлийн төвийг барьж байгуулах ажилд Монголын талаас оролцох Ажлын хэсгийг дараахь бүрэлдэхүүнтэйгээр шинэчлэн байгуулсугай. Үүнд:

Ажлын хэсгийн ахлагч	Д.Бямбаа	Төрийн захиргааны удирдлагын газрын дарга
Ажлын хэсгийн зөвлөх	Ц.Дамдин	Сайдын зөвлөх
Гишүүд:	А.Намхай	Түсгай хамгаалалттай нутгийн удирдлагын газрын дарга
	Д.Цэцгээ	Санхүү, хөрөнгө оруулалтын хэлтсийн даргын үүрэг гүйцэтгэгч
	Б.Саранцэцэг	Гадаад хамтын ажиллагааны хэлстийн мэргэжилтэн
	П.Наранбаяр	Үндэсний хөгжил, шинэтгэлийн хорооны мэргэжилтэн /тохиролцсоноор/
	Ч.Ганзориг	Богд хан уул Дархан цаазат газрын Хамгаалалтын захиргааны ахлах мэргэжилтэн
	А.Дулмаа	Академич /тохиролцсоноор/
Нарийн бичгийн дарга	С.Цогтсайхан	Төрийн захиргааны удирдлагын газрын мэргэжилтэн

KO

2.Биологийн төрөл зүйлийн төвийг барьж байгуулахад шаардагдах мэдээлэл, судалгааны холбогдолтой баримт бичиг болон манай талаас хүлээсэн үүргийг тухай бүр боловсруулан шийдвэрлэж ажиллахыг Ажлын хэсэг /Д.Бямбаа/ -т үүрэг болгосугай.

Л.ГАНСУХ

ANNEX - 6

МОНГОЛ УЛСЫН
БАЙГАЛЬ ОРЧИН,
АЯЛАЛ ЖУУЛЧЛАЛЫН САЙД

15160 Улаанбаатар хот, Чингэлтэй дүүрэг,
Нэгдсэн Үндэстний гудамж 5/2, Засгийн газрын II байр,
Утас: 26-51-71, Факс: (976-51) 26-62-86,
E-mail: monenv@mail.mn, http://www.mne.mn

2009.11.25 № 1/4953

танай _____-ны №_____-т

ЯПОНЫ ОЛОН УЛСЫН ХАМТЫН
АЖИЛЛАГААНЫ НИЙГЭМЛЭГТ
("ЖАЙКА"-Д)

Хүсэлт уламжлах тухай

Японы Засгийн газрын буцалтгүй тусламжаар хэрэгжүүлэхээр төлөвлөсөн "Цэнгэг усны нөөц ба байгаль хамгаалах төв"-ийн төслийн талаарх хэлэлцээрийг 2009 оны 5 дугаар сард байгуулахаар төлөвлөсөн байсныг нэг жилээр хойшлуулсан явдалд харамсаж буйгаа илэрхийлэхийн хамт Монгол Улсын байгаль орчныг хамгаалах үйл ажиллагаа, түүнд чиглэгдсэн сургалт сурталчилгааны ажилд жинтэй хувь нэмэр оруулах чухал ач холбогдолтой гэж үзэж байгаа энэ төслийг хугацаанд нь үр дүнтэй хэрэгжүүлэхийг хүсч байгаагаа уламжилъя.

Энэ төслийг хэрэгжүүлэхэд манай талаас шалтгаалах аливаа шийдэл, шийдвэр, дэмжлэгийг цаг алдалгүй хэрэгжүүлэхээ үүгээр нотолж байна.

Байгаль орчин, аялал жуулчлалын яамны зүгээс энэ төслийн хугацааг дахин хойшлуулахгүй, төслийн багийн санал болгож буй хувилбараар хэрэгжүүлэхийг хичээнгүйлэн хүсэхийн зэрэгцээ жил бүрийн хавар зохион байгуулдаг "Дэлхийн усны өдөр" буюу 2012 оны 3 сарын 22-ны өдрөөс өмнө төслийг хэрэгжүүлж дуусгах зорилт тавин ажиллахыг санал болгож байна.

Хувийг: Төслийн судалгааны багийн ахлагч Онуки Казутошид.

САЙД Л.ГАНСҮХ

081188

5. Soft Component (Technical Assistance) Plan

Appendix 5　Soft Component (Technical Assistance) Plan

(1)　BackgroundUnder the current situation of misuse of natural resources and unregulated development, the Government of Mongolia requested Japan's grant aid cooperation for establishment of a center for biodiversity conservation in February 2005 in order to establish effective environmental protection policies and enhance nature conservation activities.

In response to the request the Ministry of Foreign Affairs of the Government of Japan dispatched a survey team in March 2007.　The team organized activities of the framework and the two governments confirmed to have the project name as "the Center for Management of Eco-system of Freshwater Resources and Nature Conservation".

The organized activities of the center in the end are as follows.

① To implement training of government officials, PA staff, rangers, volunteers and fishermen.
② To educate and promote the awareness of nature conservation to the public and foreign tourists
③ To investigate/research regarding the implementation of above activities ① and ②.

However, it was difficult to judge the justification of the Project since (1) maturity of eco-tourism was unclear though the request aimed at eco-tourism development, and (2) long term vision and implementation structure of the Mongolian side is unclear. Thus, the Ministry of Foreign Affairs of Japan dispatched a study team, to organize framework of the Project, and confirmed the change to the title of the Project to "The Project for Construction of The Center for Management of Eco-System of Freshwater Resources and Nature Conservation".

After the process mentioned above, basic design study teams from August to September 2009 (phase 1) , from October to November 2009 (phase 2), and a draft basic design team in March 2010 were dispatched to Mongolia.

Preceded by the studies and discussions above, the Government of Japan decided to conduct an implementation review study. Japan International Cooperation Agency (JICA) then dispatched an implementation review study team to Mongolia from November 22 to December 5, 2009 for field survey and discussions with the Mongolian side. As a result, the title of the Project was agreed as "the Project for Construction of The Center for Freshwater Resources and Nature Conservation".

The range of activities to be carried out at the New Center, which will be constructed and equipped by Japan's grant aid cooperation, is wide, e.g. training, exhibition including live fish aquarium, public relations, data management, and support of research activity including training in Open Lab..　In conjunction with the above, MNET provides sufficient operation, maintenance and administrative structure

and budget to runthe New Center by assigning a total of 35 staff, 24 from the present officials of its own and 11 newly recruited. However, the following operational vulnerability was presumed due to the inexperience of the staff at the start of operation of the New Center. It is deemed that the most effective way to improve the efficiency of the effect of this project is to focus on supporting the vulnerability.

1) Exhibition Activities Support

The following themes have been planned to be presented in the exhibition facilities.

① Information outlining the eco-system of Mongolia
② Catchment area-wise information on water (rain/snow fall, glaciers, permanent snow, permafrost, human and animal population, crop production, forest fires, pests, and mine development)
③ Eco-system of each catchment area (Altay, Hangay Steppe, Gobi) and endangered species in each eco-system
④ Information on changes and threat (rainfall, glaciers, permanent snow, permafrost, rivers, change / extinction of forest area)
⑤ Promotion of cooperation for environmental conservation
⑥ Information outlining the ecological environment in Mongolia by the map of the entire eco-system of Mongolia
⑦ Freshwater eco-system, including the exhibition of live fish in aquariums
⑧ Forestry eco-system
⑨ Steppe eco-system

In order to implement the project, the Mongolian side is required to secure/prepare exhibits, which need to be confirmed first, before starting the detail design of the New Center. Meanwhile, MNET is requesting assistance for exhibit planning because it is in lack of specialists on exhibit planning though it has many specialists on exhibits.

Detailed exhibition plan will be developed in cooperation with MNET, the Mongolian Academy of Science and other relevant organizations during the Soft Component (Technical Assistance).

2) Training and PR Activities Support

The materials independently made by MNET, and other A/V materials produced on Mongolian natural environment in the past are to be used for training and to be shown to the public and foreign visitors regularly in the AV hall. However, those materials have not been organized in systematic manner or categorized and other than the ones made by MNET need to be remade. Therefore, it is necessary to have the existing materials to be kept in the same medium and format and be organized in systematic manner in order to efficiently utilize them. Therefore, in the New Center, it is planned

to produce materials for PR and training, to classify existing data and materials in systematic manner, and to show movies, videos and other A/V materials.

At the same time, MNET is requesting Soft Component (Technical Assistance)s with regard to starting up all the activities because various aspects of the work has been outsourced to NGOs and donors though there are some officials who are able to handle the equipment.

In carrying out Soft Component (Technical Assistance), preparation of inventories of the materials, planning to show the materials, and planning to produce A/V materials for training will be done in cooperation with MNET.

3) Operation and Management Activities Support

The exhibition department requires appropriate management of the facility and equipment with specialized knowledge though it is expected to generate fairly good income. The technical management experience and knowledge for handling organism required, in particular, for exhibition of freshwater eco-system that Mongolian side lacks is necessary as well as the management system corresponding to the category and ecology of freshwater fish and the function and characteristics of the aquarium. Unless these issues are taken care of before the opening of the New Center, it will face operational problems. However, it will be difficult to complete all the necessary preparation before the opening due to the reasons stated above.

In addition, as a part of the activities for visitors other than exhibition department, activities using roof terrace during the summer is planned, however, MNET has few experience of ecotourism and specific activity plan is not yet decided. Therefore, it is expected that the New Center might not to get much attention of the public nor tourists without support of a specialist with expertise in ecotourism.

Therefore, a specialist with expertise in wild life and ecotourism needs to be selected as the specialist for the Soft Component (Technical Assistance) by the consultant. The specialist is to work in cooperation with MONET and related organizations in Mongolia to assist completing preparation of a freshwater eco-system management plan and a special activity plan before the opening of the New Center.

As described above, an advantage is observed in manning plan of Mongolia for having assigned many experts. On the other hand, lack of operation and management experience especially in similar facilities as the New Center, there are concerns over the possibility of having flaws in the expected plans that need to be made within a very limited time frame, the possibility of major delay in preparation of expected activity plan, and a possible decrease in effectiveness of the grant assistance due to the time lag of inputs by the two governments.

From the background above, the request for Soft Component (Technical Assistance) by advisers

regarding exhibition plan, operation and management of training, public relations and dissemination activities in order that the New Center may have a smooth opening and systematic operation and management.

(2) Confirmation of Objectives, Results and Performances

Based on the background described above, Soft Component (Technical Assistance) Plan will be carried out to the following stages to obtain efficiency and to build self-support & development capacity of the New Center.

Items to be confirmed regarding the objectives, results, and performances are as follows.

Contents	Objectives	Result	Items for Performance Confirmation
(1) Exhibition Activities Support	・Support planning exhibitions by the Mongolian side ・Execution of exhibitions for effective propagation ・Promote and securement of certain number of visitors ・Exhibit management	・The exhibits and stored items for permanent exhibition facility are confirmed	・Exhibition plan ・Number of visitors to the exhibitions
(2) Training and PR Activities Support	・Promote efficiency in training and PR activities .	・Inventory of A/V material is prepared. ・Schedule of showing A/V materials is prepared. ・Production plan of AV materials for training is prepared.	・Showing PR movies ・Production record of AV materials
(3) Operation and Management Activities Support	・Healthy operation of freshwater eco-system facility ・Planning of appropriate activities program	・Drafting plans of annual special activities programs ・Support of freshwater eco-system management	・Number of visitors ・Freshwater eco-system management record

(3) Manning Plan

Overall plan

Regarding the timing of implementation, in order to have the inputs in the most effective timing, it is planned that there will be two dispatches in the beginning, 1. Exhibition activities support, and at the end, 2. Training and PR activities support, and 3. Operation and management activities support, of the overall project schedule.

- Exhibition activities support (The 1st Dispatch)

  In order to reflect the exhibition plan to the detail design, it will be implemented as soon as the E/N and G/A take place.

- Training and PR activities support (The 2nd Dispatch)

Aiming at smooth operation of the New Center after its opening, it will be implemented right after the completion.

- Operation and management activities support. (The 2nd Dispatch)

  Operation and management activities support of facilities and equipment will be implemented after completion of the support 2. and before the opening of the New Center.

1) Breakdown and Term

Exhibition, Training & PR Planning/Operation/Maintenance: 1 person

The ranking of the personnel will be decided after taking into consideration expertise required as previously described in the scope, be well aware of policy on natural environmental administration, possesses broad knowledge of eco-system, exhibition and operation. As for the period, the minimum number of days required to prepare the report and set period for preparation and conclusion before and after the field operations.

Duty	Rank	Memo	Term		M/M			
			2010	2012	2010		2012	
					LocalTotal	Japan Total	Local Total	Japan Total
Training, Exhibitionn Plan/Operation & Management	3	1st Assignment	(3) (22) (4)		17	3	5	4
Training, Exhibitionn Plan/Operation & Management	3	2nd Assignment		(3) (36) (4)	16	3	20	4

2) Timing

1st Assignment

At the time of concluding the consulting service agreement

Preparation period, on-site period and back home sort-out period are 3 days, 22 days and 4 days respectively.

2nd Assignment

Right after handover of the project

Preparation period, on-site period and back home sort-out period are 3 days, 36 days and 4 days respectively.

3) On-site Activities Itinerary (Draft)

1st Assignment	
Days	Action
1	・Lv. Tokyo, Ar. Ulan Bator
2	・Discussion at JICA Mongolia Office ・Courtesy Call to MONET
3	・Explanation of overall plan/objectives to Working Group, Q&A at MONET
4	・Survey on Similar Facilities (Natural History Museum) ・Discussion w/ Mongolian Science Academy
5	・Planning disscussions w/ Exhibition in-charge
6	・Planning disscussions w/ Exhibition in-charge
7	・Preparation of a draft exhibition plan
8	・Document sorting
9	・Preparation of a draft exhibition plan
10	・Discussion w/ Exhibition in-charge on a draft exhibition plan
11	・Regular meeting of the working group on exhibition plan
12	・Planning discussions w/ Exhibition in-charge
13	・Planning discussions w/ Exhibition in-charge
14	・Preparation of exhibition plan
15	・Preparation of exhibition plan
16	・Preparation of exhibition plan
17	・Regular meeting of the working group on exhibition plan and training plan policy
18	・Discussion w/ Training in-charge ・Discussion w/ the Director of the New Center
19	・Discussion w/ Training in-charge ・Discussion w/ the Director of the New Center
20	・Report to MONET ・Report to JICA Mongolian Office
21	・Document sorting
22	・Lv. Ulan Bator, Ar. Tokyo

2nd Assignment	
Days	Action
1	・Lv. Tokyo, Ar. Ulan Bator
2	・Discussion at JICA Mongolia Office ・Courtesy Call to MONET
3	・Explanation of overall plan/objectives to Working Group, Q&A at MONET
4	・Discussion w/ Training & PR in-charge ・Discussion w/ the Director of the New Center
5	・Survey on Japan Center w/ Training & PR in-charge especially on training PR contents
6	・Planning discussion w/ Training & PR in-charge
7	・Planning discussion w/ Training & PR in-charge
8	・Document sorting
9	・Planning discussion w/ Training & PR in-charge
10	・Planning discussion w/ Training in-charge ・Preparation of a draft
11	・Regular meeting of the working group on training & PR plan
12	・Planning discussion w/ Training & PR in-charge
13	・Planning discussion w/ Training & PR in-charge
14	・Preparation of training and PR plan
15	・Preparation of training and PR plan
16	・Preparation of training and PR plan ・Preparation of Operation & Maintenance Plan
17	・Regular meeting of the working group on training & PR plan and Operaion & maintenance plan
18	・Discussion w/ the Director of the New Center
19	・Survey on maintenance condition of Japan Center w/ the Director of the New Center
20	・Discussion w/ the Director of the New Center
21	・Preparation of a draft of operation and maintenance plan w/ the Director of the New Center
22	・Document sorting
23	・Preparation of an operation and maintenance plan w/ the Director of the New Center
24	・Regular meeting of the working group for discussion on operaion & maintenance plan
25	・Discussion w/ the Director of the New Center
26	・Preparation of an operation and maintenance plan w/ the Director of the New Center
27	・Preparation of an operation and maintenance plan w/ the Director of the New Center
28	・Preparation of an operation and maintenance plan w/ the Director of the New Center
29	・Document sorting
30	・Preparation of an operation and maintenance plan w/ the Director of the New Center
31	・Regular meeting of the working group for discussion on operaion & maintenance plan and summing up the project
32	・Detailed discussions with the in-charges on exhibition, training and operation & maintenance
33	・Final report to MONET
34	・Report to JICA Mongolia Office
35	・Document sorting
36	・Lv. Ulan Bator, Ar. Tokyo

6. Equipment Plan (Quantity by Request and Evaluation)

Appendix-6 Equipment Plan (Quantity by Request and Evaluation)

No.	Equipment	Application	Requested quantity							Consultant's evaluation												
			Study & training			Enlightenment & dissemination			Total	Study & training						Enlightenment & dissemination					Evaluation	Comment
			Staff & Ranger	Open Lab.	Seminar	Exhibition(Fresh water eco system)	Exhibition	Information		Activity	Open Lab.	Multi purpose hall	Seminar(1)(2)	Seminar(3)	Computer Lab.	Exhibition(Fresh water eco system)	Exhibition	Information center	Information	Others		
1	Portable GPS	Confirmation of observation point	850						850	18											B	Basic equipment for ranger training
2	Compass	Confirmation of route to destination	850						850												C	Equipment to be replaceable by the equipment N0.1
3	Chainsaw	For cutting off the fallen tree	30						30	2											B	Basic equipment for ranger training
4	Engine auger	Making hole for observation of water condition of under surface ice	30						30	1											B	Basic equipment for fishery resource research
5	Rubber boat	To be used as the transport and carrying equipment which are need for research and ranger patrol of the fresh water area in national park or any Sanctuary.	10						10	1											B	
6	Outboard engine	Power source for boat	10						10	1											B	
7	Wireless radios	To use for communication between the patrol troop and head office.	850						850	1											B	Basic equipment for ranger training
8	Digital camera	Recording ranger activity or wild animal life to show the audience who are keen to know present situation of the nature environment or problems and how to conserve for the natural resources.	850						850	8											B	
9	Video camera		850						850	9											B	
10	Binoculars	To use foe observation for research of animal life and forest ecology and poacher for through out the day.	850						850	18											B	
11	Infrared binoculars		850						850	9											B	
12	Handy distance measure apparatus	To use for measuring of river width etc.	850						850	18											B	
13	Counter	To use for counting purpose.	850						850	18											B	
14	Rubber chest boot	To use for activity in the water.	850						850	4											B	Basic equipment for fishery resource research
15	Rubber glove		850						850												C	Procurable by self-help
16	Emergency kit	For disaster and casualty	850						850												C	
17	Flash light	For night work	850						850	9											B	Basic equipment for ranger training
18	Helmet	For securing safety at observation and survey	850						850												C	Procurable by self-help
19	Stretcher	For transport of casualty	850						850												C	
20	Blanket	For night observation and ranger patrol	850						850												C	
21	Potable water container	For water supply in long lasting work	850						850												C	
22	Motorcycle	For ranger patrol	850						850												C	Equipment not to be met with the project aim
23	Handy phone (Radio)	Warning to violator and poacher	850						850	9											B	Basic equipment for ranger training
24	Smoke candle	Denotation of emergency occurrence	850						850												C	Article specified as export ban from Japan
25	Advertizing balloon	Denotation of emergency occurrence and stationary	850						850												C	Procurable by self-help
26	Tent set	Patrol and observation work through night	850						850												C	
27	Echo finder	To find out bottom condition, water depth and fishery resource of river and lake.				4			4	1											B	Basic equipment for fishery resource research
28	Bottom sampler	To collect samples for bottom sediment in river and lake working with echo sounder.				4			4	1											B	
29	Water sampler	For sample collection of water quality in the river and lake.				4			4	1											B	
30	Plankton net	For sample collection and planktor distribution survey in the river and lake.				4			4	1											B	
31	Glass ware, Container	For storage of collected samples (mud, water, plankton etc.) and experiment.		4					4		1										B	Basic equipment for Open Lab.
32	Thermometer	Measurement for water temperature at observatory point		4					4		2										B	Basic equipment for fishery resource research

No.	Equipment	Application	Requested quantity							Consultant's evaluation												
			Study & training			Enlightenment & dissemination			Total	Study & training						Enlightenment & dissemination					Evaluation	Comment
			Staff & Ranger	Open Lab.	Seminar	Exhibition(Fresh water eco system)	Exhibition	Information		Activity	Open Lab.	Multi purpose hall	Seminar(1)(2)	Seminar(3)	Computer Lab.	Exhibition(Fresh water eco system)	Exhibition	Information center	Information	Others		
33	Hygrometer	Measurement for humidity at observatory point	4						4												C	Equipment not to be met with the enlightenment & dissemination
34	Barometer	Measurement of air pressure at observatory point	4						4												C	
35	Anemoscope	Measurement for wind direction and speed at observatory point	4						4												C	Equipment not to be met with the enlightenment & dissemination
36	Clinometers	Measurement for topography at observatory point	4						4	2											B	Basic equipment for ranger training
37	Cassette recorder	To record the wild birds chirping	4						4												C	Equipment to be replaceable by the equipment N0.9
38	Casting net	To use for collecting sample fish for aquarium for display or research purpose.				10			10							5					B	Basic equipment of fish catch for exhibition of resource survey training
39	Seine net					10			10							1					B	
40	Gill net					10			10							5					B	
41	Lure tackles	Artificial bait for fish catch				10			10												C	Procurable by self-help
42	Flag and float set	For fixing fishing tools				10			10												C	
43	Scoop net	Auxiliary tool for catching sample fish				10			10							5					B	Basic equipment of fish catch for exhibition of resource survey training
44	Bucket					10			10												C	Procurable by self-help
45	Water container	For temporary storage of caught fish				1			1							1					A	Basic equipment for transportation of fish for exhibition
46	Plastic tank	For transportation of live sample fish				1			1							1					A	
47	Tube hose	Supply tools of oxygen for the transportation of live sample fish				30M			30M							20M					B	
48	Oxygen feeder					4			4							4					A	
49	Oxygen regulator					2			2							2					A	
50	Portable generator	To generate electricity outdoors				2			2												C	Out of scope in this project
51	Air stone	Supply tools of oxygen for the transportation of live sample fish				2			2												C	Equipment to be replaceable by the equipment N0.48
52	Gas chromatograph-mass spectrometry	Quantitative measurement of organic in liquid		1					1												C	Equipment not to be met with the project aim
53	Gas chromatograph with ECD,FID detectors	Measurement of chloral organic in gas and liquid		2					2												C	
54	Ion chromatograph	Measurement of anion and cation mainly in liquid		2					2												C	
55	Microwave oven	Measurement for heavy metal		1					1												C	
56	Vacuum evaporator	Removal of impurity		3					3												C	
57	Draft chamber	A properly used and properly functioning fume hood exhausts hazardous gases, dusts, mists, and vapors from a confined location and helps protect workers from inhalation exposure		2					2		1										B	Basic equipment for Open Lab.
58	Desiccators cabinet	For drying glass ware experimental equipment		10					10		1										B	
59	Refrigerator	To stock reagent and sample.		10					10		1										B	
60	Spectrophotometer	Elemental analysis of specimen		10					10												C	Equipment not to be met with the project aim
61	Electronic balance	For weighing of reagent		2					2		2										A	Basic equipment for Open Lab.
62	Spectrophotometer	For measurement of heavy metals		1					1												C	Equipment not to be met with the project aim
63	Vapor generator for arsenic	Extracting arsenic in agent		1					1												C	
64	Mercury analyzer	Measurement of mercury		1					1												C	
65	Mineral oil analyzer	Measurement of oil in water and		1					1												C	
66	Fourier transform infra red spectrometer	Analysis and measurement of chemical flocculent production		1					1												C	
67	Air sampler (high volume and low volume)	Measurement of heavy metal and organic matter in dust		10					10												C	
68	PM10 particle beta gauge	Measurement of dust in air		5					5												C	
69	Emission dust analyzer	Measurement of dust in exhaust gas		2					2												C	
70	Flue gas analyzer	Measurement of CO, CO2, Nox, Sox, HS in exhaust gas		2					2												C	

No.	Equipment	Application	Requested quantity							Consultant's evaluation												
			Study & training			Enlightenment & dissemination			Total	Study & training						Enlightenment & dissemination					Evaluation	Comment
			Staff & Ranger	Open Lab.	Seminar	Exhibition(Fresh water eco system)	Exhibition	Information		Activity	Open Lab.	Multi purpose hall	Seminar(1)(2)	Seminar(3)	Computer Lab.	Exhibition(Fresh water eco system)	Exhibition	Information center	Information	Others		
71	Automobile exhaust particle analyzer	Measurement of toxicity in auto emission		2					2												C	Equipment not to be met with the project aim
72	Automobile exhaust particle analyzer	Measurement of dust in auto emission		2					2												C	
73	pH meter	For pH analysis		2					2		2										A	Basic equipment for Open Lab.
74	Laboratory and portable conductor-meter	Measurement of water conduction		2					2												C	Equipment not to be met with the project aim
75	Ion meter with selective electrodes	Measurement of agent in water		2					2												C	Equipment not to be met with the project aim
76	Digital pipette	For use of micro-titration		10					10		5										B	Basic equipment for Open Lab.
77	Ultra pure distillation apparatus with extra filters	Producing ultra pure water		2					2												C	Equipment not to be met with the project aim
78	Distilling apparatus	Producing water for experiment and cleaning of analyzing equipment		2					2		1										B	Basic equipment for Open Lab.
79	Ioanized water distillation apparatus with extra filters	Producing water for experiment and cleaning of analyzing equipment		6					6												C	Equipment not to be met with the project aim
80	Thermo bath	Keeping stable temperature of test specimen		1					1		1										A	Basic equipment for Open Lab.
81	Stand bath	Keeping stable temperature of test specimen		1					1												C	Equipment not to be met with the project aim
82	Multi position heating mantle	Analysis organic material with high temperature		1					1												C	
83	Kjeldahl apparatus	Waste water measurement and Standard analysis		10					10												C	
84	Ultrasonic cleaner	Cleaning experiment equipment		1					1		1										A	Basic equipment for Open Lab.
85	Magnetic stirrer	Even agitation of fluid to be tested		10					10		5										B	
86	Water pump	Pouring water pump		2					2												C	Equipment not to be met with the project aim
87	Centrifuge	Segregation of element in fluid to be tested		2					2												C	
88	Shifter	Analysis soil by shifter		2					2												C	
89	Soil grander	For cracking soil		2					2												C	
90	Shaker	Even agitation of fluid to be tested		3					3		1										B	Basic equipment for Open Lab.
91	Drying cabinet	Drying filter and glass ware equipment		5					5		1										B	
92	Microwave oven	Burning test of specimen		3					3												C	Equipment not to be met with the project aim
93	Freezer	Frozen storage of reagent and biotic piece		3					3		1										B	Basic equipment for Open Lab.
94	Desiccators	Drying test specimen		3					3		1										B	
95	Under ground water level meter	Measurement for under ground water level		10					10												C	Equipment not to be met with the project aim
96	Water sampler for borehole	For measurement of temperature of under ground water and well water		10					10												C	
97	Grab sampler for bottom sediment	collecting sediment in fluid to be tested		2					2												C	
98	Air sampling mini pump	Equipment for air collection		15					15												C	
99	Air sampling pump 10-20L/min			15					15												C	
100	Air sampling pump			6					6												C	
101	Dray gas meter	Air measurement inhalated		6					6												C	
102	Portable noise level meter	Noise measurement		2					2												C	
103	Portable radiometer	Measurement of light ray level		2					2												C	
104	Low background beta counter	Measurement of dust beta ray		1					1												C	
105	Voltage stabilizer	Securing stable voltage		5					5												C	This should not evaluated as stand-alone but it is evaluated upon need of each equipment
106	Portable power generator	For outdoor observation		3					3												C	Out of scope in this project
107	Air quality monitoring station	Automatic air observation		1					1												C	Equipment not to be met with the project aim

No.	Equipment	Application	Requested quantity							Consultant's evaluation												
			Study & training			Enlightenment & dissemination			Total	Study & training						Enlightenment & dissemination					Evaluation	Comment
			Staff & Ranger	Open Lab.	Seminar	Exhibition(Fresh water eco system)	Exhibition	Information		Activity	Open Lab.	Multi purpose hall	Seminar(1)(2)	Seminar(3)	Computer Lab.	Exhibition(Fresh water eco system)	Exhibition	Information center	Information	Others		
108	Wet only precipitation collector	Measurement of precipitation		3					3												C	Equipment not to be met with the project aim
109	Biosafety cabinet	Specimen analysis in aseptically condition		2					2												C	
110	Scanning transmission electron microscope	Utilizing for measuring dust volume, configuration, observation of small configuration on specimen surface and qualitative and quantitative analysis		1					1												C	Equipment not to be met with the project aim
111	Transmission electron microscopy image	Utilizing for research of physicality of material analysis of submicroscopic materials		3					3												C	
112	Biological microscope	For observing animals and plants		10					10		4										B	Basic equipment for Open Lab.
113	ELISA apparatus	For defining germ nature and quantity observation		1					1												C	Equipment not to be met with the project aim
114	E-coli counter	Coli form number count		2					2		2										A	Basic equipment for water analysis
115	Thermo state	Keeping stable temperature of test specimen		5					5												C	Equipment not to be met with the project aim
116	Autoclave	Sterilizing the equipment.		2					2		1										B	Basic equipment for Open Lab.
117	Reagents	Reagent to be used for experiment		1					1												C	Unknown usage
118	Incubator	Keeping stable temperature of test specimen		1					1		1										A	Basic equipment for Open Lab.
119	Digital scale	Weighing of test specimen		10					10		4										B	
120	Dissect kit	For dissecting small animate beings		30					30		16										B	
121	Water circulation aquarium	For displaying live fish					7		7								7				A	Basic equipment for exhibition..
122	Stand by water tank	For water storage as backup					2		2							2					A	
123	Hand cart	For transportation of backup water tank					2		2							1					B	
124	Portable petrol operating pump	For fresh water pumping from river and lake					1		1	1											A	Basic equipment of fish catch for display
125	Hose	For fresh water pumping from river and lake					20M		20M	20M											A	
126	Apparatus fumigation	For fumigation of samples					1		1												C	No maintenance management system for this equipment
127	Laptop computer	For information processing & projector operation			3				3			1	2								A	Basic equipment for training
128	Desktop computer A	For computer training			11				11						11						A	
129	Desktop computer B	For remote operation of liquid crystal screen, book brose and searching by visitors, image brose and searching by visitors			7				7					1				5		1	A	Basic equipment for enlightenment & dissemination
130	DVD edit system	For video-editing			1				1										1		A	
131	Large-size projector	For image screening			1				1			1									A	Basic equipment for training
132	DVD Player	For replay of video			2				2			1							1		A	
133	DVD rack	For DVD storage			2				2			1							1		A	
134	Amp	For sound amplification			1				1			1									A	
135	Speaker				4				4			4									A	
136	Electrical screen	For 150 inches image screening			1				1			1									A	
137	Microphone set	For multipurpose hall			1				1set			1									A	
138	Simultaneous interpreter system	For international seminars			1				1set			1									A	
139	Video conference set	For a videoconference between international group of nature environment			1				1set					1							A	
140	Liquid crystal panel projector	For image and screening			4				4				2	1	1						A	
141	Visual presenter	For image brose			1				1										1		A	
142	Color printer	For copying learning tools, completed article in training and etc.			1				1										1		A	Basic equipment for enlightenment & dissemination
143	Liquid crystal screen	Image transmission to visitors			1				1								1				A	
144	Copier machine	For copying and distribution of related data			2				2									1	1		A	
145	Monitor	For confirming image completion			1				1										1		A	
146	Digital printer	For printing of a PR brochure			1				1										1		A	
147	Video camera	For video recording			3				3										3		A	

No.	Equipment	Application	Requested quantity							Consultant's evaluation												
			Study & training			Enlightenment & dissemination			Total	Study & training						Enlightenment & dissemination					Evaluation	Comment
			Staff & Ranger	Open Lab.	Seminar	Exhibition(Fresh water eco system)	Exhibition	Information		Activity	Open Lab.	Multi purpose hall	Seminar(1)(2)	Seminar(3)	Computer Lab.	Exhibition(Fresh water eco system)	Exhibition	Information center	Information	Others		
148	Tripod for video camera	For video recording			3				3										3		A	Basic equipment for enlightenment & dissemination
149	Single lens reflex digital camera	For digitally shooting			1				1										1		A	
150	Tripod for digital camera	For setting and sustention of camera			1				1										1		A	Basic equipment for enlightenment & dissemination
151	Lightning apparatus	Lighting equipment for shooting			1				1										1		A	
152	Microphone	For video-editing			1				1										1		A	
153	Digital recorder	For sound recording			1				1										1		A	
154	Speaker				1				1										1		A	
155	Head phone	For confirming recorded sound by blocking noise off			1				1										1		A	
156	Chair with small table	For trainee			108				108			108									A	Basic equipment for training
157	Stand for lecturer	Lecturer stand			1				1			1									A	
158	Table with blind board	For lecturer			2				2			2									A	
159	Chair with caster	For training			19				19		2			12				1		4	A	
160	White board	For lecturer			6				6		1	1	2	1	1						A	
161	Desk for instructor and trainee	For training			32				32				26	6							A	Basic equipment for training
162	Stand for printer				4				4									1	3		A	
163	Chair of trainees				107				107			4	74		11			18			A	Basic equipment for enlightenment & dissemination
164	Screen				2				2				1		1						A	Basic equipment for training
165	Computer desk				11				11						11						A	
166	Shelve type rocker				18				18											18	A	Basic equipment for enlightenment & dissemination
167	Holding stand for chair	For storage and transport chairs			11				11			11									A	
168	Data compilation and retention shelves	For data arrangement			30				30									30			A	
169	Sample custody shelves	For storing samples			4				4											4	A	
170	Magazine rack A	For storage of pamphlets and etc.			2				2									1	1		A	
171	Magazine rack B				2				2									1	1		A	
172	Partition desk	For PC operation by visitors			4				4									4			A	
173	Table	Data brose for visitors			2				2									2			A	
174	Table for laboratory	For experiment and lessen			4				4		4										A	Basic equipment for training
175	Chair for laboratory				18				18		18										A	
176	Cabinet fro data	For arrangement and storage of equipment			6				6		3								3		A	
177	Open shelves				18				18		3							2	2	11	A	
178	Office desk	For editing work			4				4									2	2		A	Basic equipment for enlightenment and dissemination
179	Office chair				4				4									2	2		A	
180	Easy book binding machine	Book binding for learning tools			2				2										2		A	
181	Working table for research work	Data brose for visitors			3				3									3			A	
182	Drawer with caster	For arrangement and storage of data					2	2	4									2	2		A	
	A set of equipment for computer network	Data management							1set											1set	A	
183	Server																			3	A	
184	Router																			5	A	
185	UPS																			25	A	
186	Hub																			5	A	
187	LAN cable																			300M	A	
188	Server rack																			3	A	

7. Review Table for Requested Equipment

Appendix-7 Review Table for Requested Equipment

Evaluation Criteria

○ Suitable

△ Further study to be required

× Unsuitable for the project aim

Overall Evaluation

Rank A
Equipment to be met with the Project aim and to be pertinent and essential for practical enforcement to the achievement

Rank B
Equipment to be nearly same as Rank A category but the quantity to be reviewed.

Rank C
Equipment not to be met with the project aim. Equipment to be concerned its increase of maintenance and management cost. Equipment for which proper personnel with necessary skills are unconfirmed. And, equipment to be replaceable by the equipment categorized as Rank A.

No.	Equipment	Consistency	Necessity	Skill level	Management system	Maintenance management system	Maintenance management expenses	Quantity relevancy	Overall evaluation
	Ranger training & Training activity								
1	Potable GPS	○	○	○	○	○	○	△	B
2	Compass	○	△	----	----	----	----	----	C
3	Chainsaw	○	○	○	○	○	○	△	B
4	Rubber boat	○	○	○	○	○	○	△	B
5	Outboard engine	○	○	○	○	○	○	△	B
6	Wireless radios	○	○	○	○	○	○	△	B
7	Video camera	○	○	○	○	○	○	△	B
8	Binoculars	○	○	○	○	○	○	△	B
9	Infrared binoculars	○	○	○	○	○	○	△	B
10	Handy distance measure meter	○	○	○	○	○	○	△	B
11	Emergency Kit	×	----	----	----	----	----	----	C
12	Flash light	○	○	○	○	○	○	△	B
13	Helmet	×	----	----	----	----	----	----	C
14	Stretcher	×	----	----	----	----	----	----	C
15	Blanket	×	----	----	----	----	----	----	C
16	Potable water container	×	----	----	----	----	----	----	C
17	Motorcycle	×	----	----	----	----	----	----	C
18	Handy phone (Radio)	○	○	○	○	○	○	△	B
19	Smoke Candle	×	----	----	----	----	----	----	C
20	Advertising balloon	×	----	----	----	----	----	----	C
21	Tent set	×	----	----	----	----	---	----	C
22	Clinometer	○	○	○	○	○	○	△	B
	Laboratory training for Survey & Practice								
1	Engine auger	○	○	○	○	○	○	△	B
2	Digital camera	○	○	○	○	○	○	△	B
3	Counter	○	○	○	○	○	○	△	B
4	Echo finder	○	○	○	○	○	○	△	B
5	Bottom sampler	○	○	○	○	○	○	△	B
6	Water sampler	○	○	○	○	○	○	△	B
7	Plankton net	○	○	○	○	○	○	△	B

No.	Equipment	Consistency	Necessity	Skill level	Management system	Maintenance management system	Maintenance management expenses	Quantity relevancy	Overall evaluation
8	Glass ware, Container	○	○	○	○	○	○	△	B
9	Thermometer	○	○	○	○	○	○	△	B
10	Hygrometer	×	×	----	----	----	----	----	C
11	Barometer	×	×	----	----	----	----	----	C
12	Anemoscope	×	×	----	----	----	----	----	C
13	Cassette recorder	○	△	----	----	----	----	----	C
14	Gas chromatograph-mass spectrometry	×	×	----	----	----	----	----	C
15	Gas chromatograph with ECD.FID detector	×	×	----	----	----	----	----	C
16	Ion chromatograph	×	×	----	----	----	----	----	C
17	Micro wave oven	×	×	----	----	----	----	----	C
18	Vacuum evaporator	×	×	----	----	----	----	----	C
19	Draft chamber	○	○	○	○	○	○	△	B
20	Desiccators cabinet	○	○	○	○	○	○	△	B
21	Refrigerator	○	○	○	○	○	○	△	B
22	Spectrophotometer	×	×	----	----	----	----	----	C
23	Electronic balance	○	○	○	○	○	○	○	A
24	Atomic absorption spectrometer	×	×	----	----	----	----	----	C
25	Vapor generator for arsenic	×	×	----	----	----	----	----	C
26	Mercury analyzer	×	×	----	----	----	----	----	C
27	Mineral oil analyzer	×	×	----	----	----	----	----	C
28	Fourier transform infra red	×	×	----	----	----	----	----	C
29	Air Sampler(high and low volume)	×	×	----	----	----	----	----	C
30	PM10 particle beta gauge	×	×	----	----	----	----	----	C
31	Emission dust analyzer	×	×	----	----	----	----	----	C
32	Flue gas analyzer	×	×	----	----	----	----	----	C
33	Automobile exhaust particle analyzer	×	×	----	----	----	----	----	C
34	Automobile exhaust particle analyzer	×	×	----	----	----	----	----	C
35	pH meter	○	○	○	○	○	○	○	A
36	Laboratory and portable conductor-meter	×	×	----	----	----	----	----	C
37	Ion meter with selective electrodes	×	×	----	----	----	----	----	C
38	Digital pipette	○	○	○	○	○	○	△	B
39	Ultra pure distillation apparatus	×	×	----	----	----	----	----	C
40	Distilling apparatus	○	○	○	○	○	○	△	B
41	Ionized water distillation apparatus with extra filters	×	×	----	----	----	----	----	C
42	Thermo bath	○	○	○	○	○	○	○	A
43	Stand bath	×	×	----	----	----	----	----	C
44	Multi position heating mantle	×	×	----	----	----	----	----	C
45	Kjeldahl apparatus	×	×	----	----	----	----	----	C
46	Ultrasonic cleaner	○	○	○	○	○	○	○	A
47	Magnetic stirrer	○	○	○	○	○	○	△	B
48	Water pump	×	×	----	----	----	----	----	C
49	Centrifuge	×	×	----	----	----	----	----	C
50	Shifter	×	×	----	----	----	----	----	C

No.	Equipment	Consistency	Necessity	Skill level	Management system	Maintenance management system	Maintenance management expenses	Quantity relevancy	Overall evaluation
51	Soil grander	×	×	----	----	----	----	----	C
52	Shaker	○	○	○	○	○	○	△	B
53	Drying cabinet	○	○	○	○	○	○	△	B
54	Microwave oven	×	×	----	----	----	----	----	C
55	Freezer	○	○	○	○	○	○	△	B
56	Desiccators	○	○	○	○	○	○	△	B
57	Under ground water label mater	×	×	----	----	----	----	----	C
58	Water sample for borehole	○	△	----	----	----	----	----	C
59	Grab sample for bottom sediment	○	△	----	----	----	----	----	C
60	Air sampling mini pump 0.5 L/min,5L/min.	×	×	----	----	----	----	----	C
61	Air sampling pump 10-20L/min	×	×	----	----	----	----	----	C
62	Air sampling pump 10-20L/min	×	×	----	----	----	----	----	C
63	Dray gas meter	×	×	----	----	----	----	----	C
64	Portable noise label meter	×	×	----	----	----	----	----	C
65	Portable radio meter	×	×	----	----	----	----	----	C
66	Low background beta counter	×	×	----	----	----	----	----	C
67	Voltage power stabilizer	○	×	----	----	----	----	----	C
68	Portable power generator	×	×	----	----	----	----	----	C
69	Air quality monitoring station	×	×	----	----	----	----	----	C
70	Wet only precipitation collector	×	×	----	----	----	----	----	C
71	Biosafety cabinet	×	×	----	----	----	----	----	C
72	Scanning transmission electron microscope	×	×	----	----	----	----	----	C
73	Transmission electron microscopy image	×	×	----	----	----	----	----	C
74	Biological microscope	○	○	○	○	○	○	△	B
75	ELISA apparatus	×	×	----	----	----	----	----	C
76	E-coli counter	○	○	○	○	○	○	○	A
77	Thermo state	×	×	----	----	----	----	----	C
78	Autoclave	○	○	○	○	○	○	△	B
79	Reagents	×	×	----	----	----	----	----	C
80	Incubator	○	○	○	○	○	○	○	A
81	Electronic balance	○	○	○	○	○	○	△	B
82	Dissect kit	○	○	○	○	○	○	△	B
Natural environmental information									
1	Laptop computer	○	○	○	○	○	○	○	A
2	Desktop computer A	○	○	○	○	○	○	○	A
3	Desktop computer B	○	○	○	○	○	○	○	A
4	DVD edit system	○	○	○	○	○	○	○	A
Display & freshwater ecology management									
1	Rubber chest boot	○	○	○	○	○	○	△	B
2	Rubber glove	○	△	----	----	----	----	----	C
3	Casting net	○	○	○	○	○	○	△	B
4	Seine net	○	○	○	○	○	○	△	B

No.	Equipment	Consistency	Necessity	Skill level	Management system	Maintenance management system	Maintenance management expenses	Quantity relevancy	Overall evaluation
5	Gill net	○	○	○	○	○	○	△	B
6	Lure tackles	○	△	----	-----	----	----	----	C
7	Flag and float	○	△	-----	-----	----	----	----	C
8	Scoop net	○	○	○	○	○	○	△	B
9	Bucket	○	△	----	-----	----	----	----	C
10	Water container	○	○	○	○	○	○	○	A
11	Plastic tank	○	○	○	○	○	○	○	A
12	Air stone	○	△	----	-----	----	----	----	C
13	Tube hose	○	○	○	○	○	○	○	A
14	Oxygen feeder	○	○	○	○	○	○	○	A
15	Oxygen regulator	○	○	○	○	○	○	○	A
16	Pressure regulator	○	×	----	-----	----	----	----	C
17	Portable petrol operation pump	○	○	○	○	○	○	○	A
18	Hose	○	○	○	○	○	○	△	B
19	Water circulation aquarium	○	○	○	○	○	○	○	A
20	Stand by water tank Water pump and hose	○	○	○	○	○	○	○	A
21	Hand cart	○	○	○	○	○	○	△	B
22	Apparatus fumigation	○	○	△	○	△	△	○	B
	Audio video & Printing and Binding								
1	Large -size projector	○	○	○	○	○	○	○	A
2	DVD player	○	○	○	○	○	○	○	A
3	DVD rack	○	○	○	○	○	○	○	A
4	Amp	○	○	○	○	○	○	○	A
5	Speaker	○	○	○	○	○	○	○	A
6	Electrical screen	○	○	○	○	○	○	○	A
7	Microphone set	○	○	○	○	○	○	○	A
8	Simultaneous interpreter system	○	○	○	○	○	○	○	A
9	Video conference set	○	○	○	○	○	○	○	A
10	Liquid crystal panel projector	○	○	○	○	○	○	○	A
11	Visual presenter	○	○	○	○	○	○	○	A
12	Color printer	○	○	○	○	○	○	○	A
13	Liquid crystal screen	○	○	○	○	○	○	○	A
14	Copier machine	○	○	○	○	○	○	○	A
15	Monitor	○	○	○	○	○	○	○	A
16	Digital printer	○	○	○	○	○	○	○	A
17	Video camera	○	○	○	○	○	○	○	A
18	Tripod for video camera	○	○	○	○	○	○	○	A
19	Single lens reflex digital camera	○	○	○	○	○	○	○	A
20	Tripod for digital camera	○	○	○	○	○	○	○	A
21	Lightning apparatus	○	○	○	○	○	○	○	A
22	Microphone	○	○	○	○	○	○	○	A
23	Digital recorder	○	○	○	○	○	○	○	A
24	Speaker	○	○	○	○	○	○	○	A

No.	Equipment	Consistency	Necessity	Skill level	Management system	Maintenance management system	Maintenance management expenses	Quantity relevancy	Overall evaluation
25	Head phone	○	○	○	○	○	○	○	A
26	Easy book binding machine bind with glue bind with hole	○	○	----	○	○	○	○	A
	Furniture								
1	Chair with small table	○	○	----	○	○	○	○	A
2	Stand for lecture	○	○	----	○	○	○	○	A
3	Table with blind board	○	○	----	○	○	○	○	A
4	Chair with caster	○	○	----	○	○	○	○	A
5	White board	○	○	----	○	○	○	○	A
6	Desk for instructor and trainees	○	○	----	○	○	○	○	A
7	Stand for printer	○	○	----	○	○	○	○	A
8	Chairs for trainees	○	○	----	○	○	○	○	A
9	Screen	○	○	----	○	○	○	○	A
10	Computer desk	○	○	----	○	○	○	○	A
11	Shelves type rocker	○	○	----	○	○	○	○	A
12	Holding stand for chair	○	○	----	○	○	○	○	A
13	Data compilation and retention shelves	○	○	----	○	○	○	○	A
14	Sample custody shelves	○	○	----	○	○	○	○	A
15	Magazine rack A	○	○	----	○	○	○	○	A
16	Magazine rack B	○	○	----	○	○	○	○	A
17	Partition desk	○	○	----	○	○	○	○	A
18	Table with blind board	○	○	----	○	○	○	○	A
19	Table for laboratory	○	○	----	○	○	○	○	A
20	Chair for laboratory	○	○	----	○	○	○	○	A
21	Cabinet for data	○	○	----	○	○	○	○	A
22	Open shelves	○	○	----	○	○	○	○	A
23	Office desk	○	○	----	○	○	○	○	A
24	Office chair	○	○	----	○	○	○	○	A
25	Table	○	○	----	○	○	○	○	A
26	Drawer with caster	○	○	----	○	○	○	○	A
	Computer network								
1	∗ Server	○	○	○	○	○	○	○	A

∗ Cost estimation for Router, Hub, Lan cable for computer network is handled architectural work field.

8. Specification of Equipment, Procurement Source, Country of Origin and Necessity of Local Agent

Appendix-8 Specification of Equipment, Procurement Source, Country of Origin and Necessity of Local Agent

No.	Equipment	Specification	Final Quantity	Procurement Source	Country of origin	Necessity of local agent	
						Spare parts for consumable	Maintenance
1	Portable GPS	Type: Water proofing, Display: Display with back light, Precision: within 20m	18	Japan	USA/EU China	----	----
2	Chainsaw	Type: Petrol operate, Engine displacement: 30cc or more, Cutting capacity: approx 300mm more, Fuel tank: 200cc or more.	2	Japan	EU/China	----	----
3	Engine auger	Type: Petrol operate, Displacement: 30cc or more, Auger length: 600mm or more, Auger diameter: 150mm or more	1	Japan	EU/China	----	----
4	Rubber boat	Capacity: 6 crew, Type: Heavy duty, Dimension: 400cm x 160cm or more Maximum loading: 30PS or more, Attachment: Paddle, Foot pump, Board chair, Anchor Life jacket and Ring float	1	Japan	Japan	----	----
5	Outboard engine	Type: 4 cycle engine, Engine power: 15 HP or more, Attachment: Engine stand of 80cm or more	1	Japan	Japan	○	○
6	Wireless radios	1. HF for Base Station 2. HF for Vehicles 3. VHF for Vehicles 4. Portable VHF radio apparatus Main Specification 1. HF for Base Station Reception: approx 0.5-30MHz, Transmission: approx 1.5-30MHz, Output: approx 100W. 2. HF for Vehicles Reception: approx 0.5-30MHz Transmission: approx 1.5-30MHz, Output: approx 100W, 12V DC. 3. VHF for Vehicles Frequency 136-175MHz, Output: approx 25W 4. Portable VHF Frequency: 136-174 MHz, Output: approx 5W Attachment: AC and DC battery charger	1 set	Japan	Japan	----	----
7	Digital camera	Model: Digital Still Camera Gross pixels: 10 million or more LCD Monitor: TFT 3 inches or more Optic zoom ratio: 20x or more -Automatic assembling panoramic picture function	8	Mongolia	Japan	----	----
8	Video camera	Full HD Video Recording media: HDD(80GB or more) Optic zoom ratio: 10x or more Recording format: PAL LCD screen: 2.5 inches or more	9	Mongolia	ASEAN/ Japan	----	----
9	Binoculars	Zoom: 8-20x or more	18	Japan	Japan	----	----
10	Infrared binoculars	Zoom: 5x or more	9	Japan	USA	----	----
11	Handy distance measure apparatus	Type: Distance measurement by laser and water proof system, Capacity of measurement: Approx 500m Indication : in Digital	18	Japan	EU	----	----
12	Counter	Type: Manual reset function, Capacity of counting: 3 digit or more	18	Japan	Japan	----	----
13	Rubber chest boot	Size: M,L	4	Japan	Japan	----	----
14	Flash light	Bulb: 20W/6W, Irradiation range: 500m or more, Power : Chargeable battery	9	Japan	Japan	----	----
15	Megaphone	Output: Approx 10W, Range distance: Approx 250m or more	9	Japan	Japan	----	----
16	Echo finder	Display size: 6 model color liquid crystal Sounding Range: 0～3/100 m	1	Japan	Japan	----	----
17	Bottom sampler	Type: Ekman-barge with rope, Size: Approx 150 x 150mm	1	Japan	Japan	----	----
18	Water sampler	Type: High funnel type, Capacity: Approx 1000cc, Material: Transparency glass or plastic	1	Japan	Japan	----	----
19	Plankton net	Caliber: 40cm Length: 100-120Cm, Size of mesh: NXX 13, Flow meter: Digital analog 2 digit or more	1	Japan	Japan	----	----
20	Plankton net	Caliber: 40cm, Length: 100-120Cm, Size of mesh: NXX 17	1	Japan	Japan	----	----
21	Glass ware, Container	Beaker: 100/300/500ml, Triangle flask: 100/300/500ml, Flat bottom flask: 300/500ml, Petri dish, Examinations tube, Funnel, Screw bottle, Pipette, Mess-cylinder,Burettes, Mortar, Retort stand, Burettes stand, Pipette stand tripod, Wire net, Stand of examination tube, Nipper of examination tube, Burner, Alcohol lamp, Nipper of beaker	1set	Japan	Japan	----	----

No.	Equipment	Specification	Final Quantity	Procurement Source	Country of origin	Necessity of local agent	
						Spare parts for consumable	Maintenance
22	Thermometer	Purpose: Measurement of water temperature, Type: Digital type with bar type sensor	2	Japan	Japan	----	----
23	Clinometers	Purpose: Measurement of inclination of geographical features, Reading form: Direct read, Digital or analog	2	Japan	Japan	----	----
24	Casting net	Type : A Nylon fiber multi, Mesh size: Approx 5mm, Number of mesh : Approx 1,500, Circumference : Approx 14m、Net height: 2.7m, Weight: Approx 3.5kg	1	Japan	Japan	----	----
25	Casting net	Type : B Nylon fiber multi, Mesh size: Approx 7.5mm, Number of mesh : Approx 900, Circumference : Approx 13m、Net height: Approx 2.3 m, Weight: Approx 3.7kg	2	Japan	Japan	----	----
26	Casting net	Type : C Nylon fiber multi, Mesh size: Approx 30mm Number of mesh : Approx 400, Circumference : Approx 17 m, Net height: Approx 3 m Weight: Approx 5kg	1	Japan	Japan	----	----
27	Casting net	Type : D Nylon fiber multi. Mesh size: Approx 50mm, Number of mesh : Approx 240, Circumference : Approx 16 m, Net height: Approx 3 m, Weight: Approx 4.5 kg	1	Japan	Japan	----	----
28	Seine net	Side net : Polyester with frog cross knit, Mesh size: Approx50.5mm, Net height: Approx 3.3, Length: Approx 25m both side, Bag net: Polyester with frog cross knit, Mesh size: Approx 25.2mm, Net height: Approx 3.3m, Length: Approx 7m, Drug rope: 16mm diameter and 50m for both side	1	Japan	Japan	----	----
29	Gill net	Materials: Nylon fiber, Mesh size: 50mm, Net height: 1.5m, Length: 25m	3	Japan	Japan	----	----
30	Gill net	Materials: Nylon fiber, Mesh size: 50mm, Net height: 1.5m, Length: 30 m	2	Japan	Japan	----	----
31	Scoop net	Material of net: Tetrone, Mesh size: Approx 9mm, Out side dimension: Approx 390w x 280H, Total length: Approx 1.5m, Material of frame: Approx 6mmdiameter of Stainless wire	2	Japan	Japan	----	----
32	Scoop net	Material of net: Tetrone, Mesh size: Approx 15mm, Out side dimension: Approx 450w x 300H, Total length: Approx 1.5m, Material of frame: Approx 10mm diameter of Stainless wire	2	Japan	Japan	----	----
33	Scoop net	Material of net: Tetrone, Mesh size: Approx 12mm, Out side dimension: Approx 1500W x 100W x 1000L x 500H, Total length: Approx 1.5m, Material of frame: Approx diameter 25mm polyvinyl chloride pipe	1	Japan	Japan	----	----
34	Water container	Material : Plastic with lidded, Size: Approx 800x600x500mm (200L)	1	Japan	Japan	----	----
35	Plastic tank	Capacity: Approx 1000L with hose and two way type branch pipe, Attachment: Oxygen feeder size 2, Dual oxygen pressure regulator	1set	Japan	Japan	----	----
36	Draft chamber	Working face: Anti chemical, Exhaust fan: Sirocco fan to be equipped at top, Dimension: Approx 1200-1500W x 800mm D	1	Japan	Japan	----	----
37	Desiccators cabinet	Purpose: Drying for equipment or glass ware with digital control, Range of temperature: higher than 60 ℃, System of circulation: Natural circulation. Capacity: More than 300L	1	Japan	Japan	----	----
38	Refrigerator	Purpose: Keeping reagent System: Front glass door Capacity: 140L or more Temperature range: 2～14℃ Monitor: with monitor Power: 220v, 50Hz	1	Japan	Japan	----	----
39	Microbalance	Capacity : Approx 210g with windshield, Minimum weight count: 0.1mg	2	Japan	Korea	----	----
40	pH meter	Type: Table top with digital indication and electrode, Range of measurement: 0-14pH	2	Japan	EU	----	----
41	Digital pipette	0.5-10uL/2-20uL/10-100uL/20-200uL/100-1000uL, Each one with 1000 chips	5	Japan	EU	----	----
42	Distilling apparatus	Type: Table top, Material water: Tap water, Capacity: More than 1.8L/hour, Filter: Ion exchange with pre-treatment	1	Japan	Japan	----	----
43	Thermo bath	Type: With observation window, Maximum temperature: More than 80℃, System of temperature control: PID, Capacity: Approx 30L	1	Japan	Japan	----	----
44	Ultrasonic cleaner	Type: With thermometer and more than 30 minutes of timer, Tank capacity: More than 2L	1	Japan	Japan	----	----
45	Magnetic stirrer	Type: With adjusting dial, Stirred capacity: more than 1L, Rounding coverage: more than 1000rpm	5	Japan	Japan	----	----
46	Shaker	Type: Reciprocate shaking, Shaking speed: 200rpm (variable), Variable flask holder: rack with spring, Speed indicator: Digital	1	Japan	Japan	----	----
47	Drying cabinet	Type: Rack with hot air blower, High temperature: more than 50℃, Timer: more than, 60 minutes, Number of shelves: more than 3, Size: approx700x500x1500mm	1	Japan	Japan	----	----

No.	Equipment	Specification	Final Quantity	Procurement Source	Country of origin	Necessity of local agent	
						Spare parts for consumable	Maintenance
48	Freezer	Vertical type with basket, Inner volume: more than 450L, Minimum temperature: : below -30℃	1	Japan	Japan	----	----
49	Desiccators	Type: Plastic, Size: approx 300x300x500mm, Number of shelf: more than 2	1	Japan	Japan	----	----
50	Biological microscope	Type: Binocular for bright field, Ocular lens: 10x , Field lens: 4/10/40/100x , Lighting: with adjustable dial, Stage: Mechanical	2	Japan	Germany/ Philippi-nes	----	----
51	Stereo microscope	Type: Stereomicroscopic binocular with zoom lens, Ocular lens: 10X , Overall scale factor: more than 40x	2	Japan	Germany/ Philippi-nes	----	----
52	E-coli counter	Indicator: more than 3 digits, Petri dish size: more than 90mm, Lighting: fluorescent with more than 12W, Amplifier: 100mm in diameter	2	Japan	Japan	----	----
53	Autoclave	Type: Vertical type with stainless bag, Inner volume: approx 20L, Maximum temperature: more than 120℃, Control: Digital	1	Japan	Japan	----	----
54	Incubator	Type: Natural circulation type, Temperature coverage: Room temperature ～60℃, Temperature control: PID, Inner volume : approx 30L, Timer : 99 hours	1	Japan	Japan	----	----
55	Digital scale	Weighing capacity : 300-400g, Reading limitation: 0.001g	4	Japan	Korea	----	----
56	Dissect kit	Set of knife, nipper, stalked needle, tweezers in wooden box	16	Japan	Japan	----	----
57	Water circulation aquarium	Model: Water circulation aquarium made of acryl with 3 tons water dosage and frame pedestal Size: approx 3000 x 1000 x H1000mm Acryl resin: 25mm thickness or more Filtering : Circle method with enough capacity Attachment: Cooler, Heater, lighting, filter material, Air pump Power: 200V three phase, 100V single phase 50Hz	1 set	Japan	Japan	----	----
58	Water circulation aquarium	Model: Water circulation aquarium made of acryl with frame pedestal Size: approx φ1500 x H1000mm Acryl resin: 25mm thickness or more Filtering : Circle method with enough capacity Attachment: Cooler, lighting, filter material, Air pump Power: 200V three phase, 100V single phase 50Hz	1 set	Japan	Japan	----	----
59	Water circulation aquarium	Model: Water circulation aquarium made of acryl with 0.75 tons water dosage and frame pedestal Size: approx 1500 x 600 x H800mm Acryl resin: 20mm thickness or more Filtering : Circle method with enough capacity Attachment: Cooler, lighting, filter material, Air pump Power: 100V single phase 50Hz	3 sets	Japan	Japan	----	----
60	Water circulation aquarium	Model: Water circulation aquarium made of acryl with 0.6 tons water dosage and frame pedestal Size: approx 1250 x 600 x H800mm Acryl resin: 20mm thickness or more Filtering : Circle method with enough capacity Attachment: Cooler, lighting, filter material, Air pump Power: 100V single phase 50Hz	1 set	Japan	Japan	----	----
61	Water circulation aquarium	Model: Water circulation aquarium made of acryl with 0.2 tons water dosage and frame pedestal Size: approx 600 x 600 x H600mm Acryl resin: 10mm thickness or more Filtering : Circle method with enough capacity Attachment: Cooler, lighting, filter material, Air pump Power: 100V single phase 50Hz	1 set	Japan	Japan	----	----
62	Stand by water tank	Underwater Pump: Stainless made, Three phase 220V, 400W, Polypropylene tank: Approx 100L	2	Japan	Japan	----	----
63	Hand cart	Loading capacity: More than 500kg, Cart dimension: approx 1200x700mm with stopper	1	Japan	Japan	----	----
64	Portable petrol operating pump	Operating system: Petrol operating, Engine displacement: Approx 140cc, Output : Approx 2Kw, Diameter of pump intake 50mm, Diameter of pump discharge 50mm, Head approx 30m faculty of discharge : More than 200 L.	1	Japan	Japan	----	----
65	Laptop computer	CPU: Intel Core 2 Duo 2.2GHz Memory: 4GB or more HDD: 320GB or more Monitor: 14", XGA display or more Optical disc drive: DVD±RW/±R DL/RAM drive OS: MS Windows Vista or newer MS: Office2007, Pre-installed Anti-virus measure Power: 220V 50Hz	3	Mongolia	ASEAN/ China/ Japan	----	○

No.	Equipment	Specification	Final Quantity	Procurement Source	Country of origin	Necessity of local agent	
						Spare parts for consumable	Maintenance
66	Desktop computer A	CPU: Intel Core 2 Duo 2.2GHz Memory: 4GB or more HDD: 320GB or more Monitor: 20", XGA display or more OS: MS Windows Vista or newer, MS: Office2007, Pre-installed Anti-virus measure ArcView Single use x 2 With UPS (3 minutes back up or more) Power: 220V 50Hz	11	Mongolia	ASEAN/ China/ Japan	----	○
67	Desktop computer B	CPU: Intel Core 2 Duo 2.2GHz Memory: 4GB or more HDD: 320GB or more Monitor: 20", XGA display or more OS: MS Windows Vista or newer MS: Office2007, Pre-installed Anti-virus measure With UPS (3 minutes back up or more) Power: 220V 50Hz	7	Mongolia	ASEAN/ China/ Japan	----	○
68	DVD edit system	CPU: Intel Xeon 3GHz Dual or more Memory: 4GB or more Built-in HDD: 250GB or more, External HDD with 1TB or more With HDV digital recorder With HD video camera compatible to HDV/DV With DVD label printer With UPS, With image/audio editing software Optical disc drive: DVD±RW/±R DL/RAM drive Video capture board for SD/DH-SDI Multi-Monitor Graphic controller Power: 220V 50Hz	1	Japan	ASEAN/ Japan	----	----
69	Projector	Model: 3LCD Brightness: approx 3000 lumens Number of pixels: 700 thousand or more Controller: Remote Control Installation: with ceiling mounting Power: 220V 50Hz	1	Japan	Japan/ China	----	----
70	DVD player	Color System: PAL Function: Repeat playback Video media: DVD±RW/±R/DVD-RAM/CD-R/-RW	2	Japan	ASEAN/ EU	----	----
71	DVD rack	Loading capacity of top board : approx 50Kg, Registrant strength of shelve board : approx 10Kg, Registrant strength of drawer : approx 10Kg, Outside dimension: approx 900W x 440D x 350H, Syntactic fiber board made, with caster	2	Japan	Japan	----	----
72	Amp	Amp for PA, Rated output: 240W, Microphone input: 6CH, AC220V	1	Japan	ASEAN/ Japan	----	----
73	Speaker	Compact type, Rating output: 240w, Microphone input: 6 CH, AC220v	4	Japan	ASEAN	----	----
74	Electrical screen	150 inches, AC220V	1	Japan	Japan	----	----
75	Microphone sets	1. For general speech 2. Tie clip type wireless microphone 3. Wireless microphone for speech 4. With stand for microphone	1 set	Japan	ASEAN/ Japan	----	----
76	Simultaneous interpreter system	Simultaneous interpreter system for international conference Microphone/ Head phone: 2 Desktop transmitter: 2 Infrared station: 2 Portable Receiver: 108 Ear phone: 108 Battery Charger: 5 Cable: 4	1 set	Japan	USA/EU	----	----
77	Video conference set	Standard: ITU-TH.320/H323/IETF SIP Communication speed: Maximum 10240kbps (IP connection) 1/3 CMOS with 2 million pixel camera Audio: Stereo with eco-cancelling Simultaneous transmittal of image/audio and PC screen	1 set	Japan	Japan	----	----
78	Liquid crystal panel projector	Model: 3LCD Number of pixels: 700 thousand or more Brightness: 2000 lumens or more Power: 220V 50Hz	4	Mongolia	ASEAN/ China	----	----

No.	Equipment	Specification	Final Quantity	Procurement Source	Country of origin	Necessity of local agent	
						Spare parts for consumable	Maintenance
79	Visual presenter	Application: For general data and image Gross number of pixels: 850 thousand or more Frame rate: 20 frame/second Frame coverage: Maximum A3 or equivalent Zoom: 16x optic or more Resolution: 600TV(horizontal)or more, 600TV (vertical) or more	1	Japan	Japan/ China	----	----
80	Color printer	Printing method: Ink jet, Color: 8 colors or more Maximum printing: up to A1 size Resolution: 2400 x 1200 dpi or more Memory: 384 MB or more Power: 220V 50Hz	1	Mongolia	ASEAN/ China	○	○
81	Liquid crystal screen	Size: 50 inches, Pixel: 1920 x 1080, Input: RGB/BNC/Video	1	Mongolia	ASEAN/ EU/ China	----	----
82	Copier machine	Printing speed: 18 papers/minute or more HDD: 80 MB or more Paper rack capacity: 500 papers or more Quality: 600 dpi Function: Leaser copy with flat scanner Power: 220V 50Hz	2	Mongolia	ASEAN/ China/	○	○
83	Monitor	Size: 22 inches or more Resolution: 1900 x 1200 or more Maximum brightness : 250cd/m^2 or more Contrast rate: 1000:1 or more Maximum number of display color: 1 billion or more Power: 220V 50Hz	1	Japan	ASEAN/ Japan/ Korea	----	----
84	Digital printer	Printing method: Two colors digital printing Size: Maximum A3 Printing speed: 130 ppm or more Reading dissection : 300 dpi×600 dpi or equivalent Writing dissection : 300 dpi×600 dpi or equivalent Attachment: Frame with caster Power: 220V 50 Hz	1	Mongolia	ASEAN/ China	○	○
85	Video Camera	Full HD video Recording capacity: Built-in HDD (80GB or more) Video camera with tripod Optics Zoom Ratio: 10x or more Signaling system: PAL LCD: 2.5 inch or more	3	Mongolia	ASEAN/ Japan	----	----
86	Single lens reflex digital camera	Type: Single lens reflex Number of pixels: 10 million or more Interchangeable lens: 18-55mm, F3.5-5.6 SAM or equivalent LCD screen: 2.7 inch or more Attachment: Tripod, 8GB memory card	1	Mongolia	ASEAN/ Japan	----	----
87	Lighting apparatus	Type: Common functions with following components, 1 of metal halide light with 110W , 2 of umbrella for shooting, 2 of strobe head, 2 of stand, 1 of lighting equipment for shooting, 2 of reflection curtain, 2 of reflection board, Storage equipment	1 set	Mongolia	ASEAN/ China	----	----
88	Microphone	Dynamic, uni-directional microphone for narration recording. Frequency response 50-18,000Hz	1	Japan	Japan	----	----
89	Digital recorder	Type: Portable PCM stereo recorder Recording Media: Memory stick Recoding format: 16/24 bit Power: 220V 50Hz	1	Japan	ASEAN/ China	----	----
90	Speaker	Biamp, 2-way bass reflex type powered speaker Frequency response: 50Hz-40kHz	1	Japan	ASEAN	----	----
91	Headphone	Over-head, closed, Dynamic type. Frequency response: 5-30,000Hz, Sensitivity: 105dB/mW	1	Japan	ASEAN	----	----
92	Chair with small table	With caster and be able to pile up , Dimension: approx 500W x 600D x 830H	108	China	China	----	----
93	Stand for lecturer	Wooden made, Dimension: approx 650W x 500D x 1100H	1	China	China	----	----
94	Table with blind board	Be able to folding , Dimension: approx 1800W x 500D x 700H	2	China	China	----	----
95	Chair with caster	With caster and with out armrest , Dimension: approx 600W x 550D x 900-1000H	19	China	China	----	----
96	White board	Size : approx 1800W x 900D	6	China	China	----	----

No.	Equipment	Specification	Final Quantity	Procurement Source	Country of origin	Necessity of local agent	
						Spare parts for consumable	Maintenance
97	Desk for instructor and trainee	Size: 1500W x 600D x 700H	32	China	China	----	----
98	Stand for printer	Size: approx 800W x 700D x 700H	4	China	China	----	----
99	Chair of trainee	Size: approx 550W x 550D x 750H	107	China	China	----	----
100	Screen	Approx 100 inches	2	China	China	----	----
101	Computer desk	Size : approx 1200W x 1000D x 700H	11	China	China	----	----
102	Shelves type rocker	Size: approx 900W x 450D x 1800H	18	China	China	----	----
103	Holding stand for chair	Holding capacity: 10 chairs/stand	11	China	China	----	----
104	Data compilation and retention	Size: approx 900W x 400D x 2100H	30	China	China	----	----
105	Sample custody shelves	Size: approx 1200W x 600D x 2100H	4	China	China	----	----
106	Magazine rack A	Size: approx 1200w x 450D x 1800-2000H	2	China	China	----	----
107	Magazine rack B	Size: 600-1200W x 400-450D x 900-2000H	2	China	China	----	----
108	Partition desk	External size: approx 1000W x 600 D x 1120H	4	China	China	----	----
109	Table	Size : approx 900W x 900 D x 700H	2	China	China	----	----
110	Table for laboratory	Size: approx 1800W x 1200D x 800H with outlet and drawer	4	Japan	Japan	----	----
111	Chair for laboratory	Size: approx 560” diameter x 820H	18	China	China	----	----
112	Cabinet for data	Size: approx 900W x 450D x 1700-2100H steel made	6	China	China	----	----
113	Open shelves	Size: approx 900W x 450D x 1800-2100D x 1800-2100H	18	China	China	----	----
114	Office desk	Size: 1200W x 700 D x 700H	4	China	China	----	----
115	Office chair	Size: 600W x 560D x 1010H	4	China	China	----	----
116	Easy book binding machine	Glue type: Maximum binding thickness 40mm, maximum binding length 390mm	1	Japan	Japan	----	----
117	Easy book binding machine	Ring biding type: Maximum binding thickness 28mm, maximum binding size A4 with manual punch	1	Japan	Japan	----	----
118	Working table for research work	Size: 1500W x 1800D x 700H	3	China	China	----	----
119	Drawer with caster	Size: 420W x 600 D x 600H	4	China	China	----	----
120	A set of equipment for computer network	Server CPU: Quad Core Intel Xeon E5506 MEM: 4GB or more HDD: 300GB x 6 OS: MS Windows Server 2008 standard ed. Eng. KIT: Dell Open Management Server CPU: Quad Core Intel Xeon E5502 MEM: 4GB or more HDD: 300GB x 4 OS: MS Windows Server 2008 standard ed. Eng. KIT: Dell Open Management APC UPS 1500VA x 2 Power: 220V 50Hz	1set	Mongolia	ASEAN/ China	○	○

9. IEE Notice

МОНГОЛ УЛСЫН
БАЙГАЛЬ ОРЧИН,
АЯЛАЛ ЖУУЛЧЛАЛЫН ЯАМ
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Нэгдсэн Үндэстний гудамж 5/2 Засгийн газрын II байр
Утас: 26-61-71 Факс: (976-11) 26-62-86,
И-мэйл: monenv@mail.mn, http://www.mne.mn

2009.05.30 № 6/2802

танай _____ -нд: №_____ -т

"ЦЭНГЭГ УСНЫ НӨӨЦ, БИОЛОГИЙН ТӨРӨЛ ЗҮЙЛИЙН ТӨВ" ТӨСЛИЙГ ЗОХИОН БАЙГУУЛАХ АЖЛЫН ХЭСЭГТ

Улаанбаатар хотын Хан-Уул дүүргийн 11 дүгээр хорооны нутаг дэвсгэр Богд Хан уулын Дархан цаазат газрын Зайсангийн аманд "Цэнгэг усны нөөц, биологийн төрөл зүйлийн төв" байгуулах төсөлд "Байгаль орчинд нөлөөлөх байдлын үнэлгээний тухай хууль"-ийн дагуу Ерөнхий үнэлгээ хийв.

Ерөнхий үнэлгээний дүгнэлтийг үндэслэн уг төслийг нөхцөл болзолтойгоор хэрэгжүүлэх боломжтой гэж үзлээ.

Ерөнхий үнэлгээний дүгнэлтийг хавсаргав.

ЕРӨНХИЙ ШИНЖЭЭЧ Ч.ГАНБАТ

УХА0017

090813

Байгаль орчин, аялал жуулчлалын яам

БАЙГАЛЬ ОРЧИНД НӨЛӨӨЛӨХ БАЙДЛЫН ЕРӨНХИЙ ҮНЭЛГЭЭНИЙ ДҮГНЭЛТ

2009 оны 3 дугаар
сарын 26-ны өдөр

Улаанбаатар хот

Төслийн дугаар **2009/J 021**

ТӨСЛИЙН ТОВЧ ТОДОРХОЙЛОЛТ

Төслийн нэр	"Цэнгэг усны нөөц, биологийн төрөл зүйлийн төв" байгуулах төсөл
Төслийн байршил	Улаанбаатар хотын Хан-Уул дүүргийн нутаг дэвсгэрт Богд Хан уулын Дархан цаазат газрын Зайсангийн аманд хэрэгжүүлнэ.
Төсөл хэрэгжүүлэгч	Япон улсын буцалтгүй тусламжийн хүрээнд "Цэнгэг усны нөөц, биологийн төрөл зүйлийн төв"-ийг барьж байгуулах ажилд Монголын талаас БОАЖ-ын сайдын 2008 оны 10 дугаар сарын 07-ны 15 дугаар тушаалаар томилогдсон ажлын хэсэг.
Төсөл хэрэгжүүлэгчийн хаяг	Улаанбаатар хот, Чингэлтэй дүүрэг, БОАЖЯ. Утас: 51-261516, Ажлын хэсгийн ахлагч Ц.Дамдин.
Төслийн хүчин чадал, товч тодорхойлолт	"Цэнгэг усны нөөц, биологийн төрөл зүйлийн төв" байгуулах төслийн хүрээнд үндсэн 3 давхар барилга байгууламж барихаар төлөвлөсөн байна. Урьдчилсан төлөвлөлтөөр 1 дүгээр давхарыг жуулчин, энгийн иргэд үйлчлүүлэх, 2 дугаар давхарт сургалтын танхим, байгаль орчны мэдээлийн төв, 3 дугаар давхарт судалгаа шинжилгээний лаборатори, оффис байрлуулах ба зоорийн давхарт гаднаас оруулах дэд бүтэц, авто машины граж, үзэлийн өрөө зэргийг байрлуулахаар тооцоолсон байна. Төслийн үйл ажиллагааг хэвийн явуулахад шаардагдах эрчим хүч, дулаан хангамж, цэвэр, бохир усны асуудлыг төвлөрсөн шугам сүлжээнд холбох, бусад техник хэрэгсэл, тоног төхөөрөмж, түүхийн эд, материалийг төслийн ТЭЗҮ, зураг төсөл, төлөвлөлтөд заасныг дагуу ашиглахаар төлөвлөжээ. Төсөл хэрэгжүүлэгчид уг төвд 35 хүнийг ажлын байраар хангаж үйл ажиллагаа явуулна.

ЕРӨНХИЙ ҮНЭЛГЭЭНИЙ ДҮГНЭЛТ

Улаанбаатар хотын Хан-Уул дүүргийн нутаг дэвсгэрт Богд Хан уулын ДЦГ-ын Зайсангийн аманд "Цэнгэг усны нөөц, биологийн төрөл зүйлийн төв" байгуулах төсөлд "Байгаль орчинд нөлөөлөх байдлын үнэлгээний тухай" хуулийн дагуу Ерөнхий үнэлгээ хийж, уг төслийг нөхцөл болзолтойгоор хэрэгжүүлэх боломжтой гэж үзлээ.

ТӨСӨЛ ХЭРЭГЖҮҮЛЭХЭД МӨРДӨЖ АЖИЛЛАХ ШААРДЛАГАТАЙ НӨХЦӨЛ БОЛЗОЛ

Хийх ажлын нэр	Хугацаа	Тайлбар
1. Усны нөөцийг зохистой ашиглах, ахуйн болон барилга байгууламжийг барих явцад ашиглах усны эх үүсвэрийг тогтоож, ус ашигласны төлбөрийг тогтоосон хугацаанд барагдуулах; - Ахуйн хаягдал бохир усыг холбогдох байгууллагаас техникийн нөхцөл авч, гэрээ байгуулан төвлөрсөн шугам сүлжээнд нийлүүлэх байдлаар шийдвэрлэх. - Бохир ус зайлуулах шугам хоолойн битүүмжлэл, байгалийн болон гадны нөлөөгөөр зэврэлт, цооролт үүсч хөрс, гүний усыг бохирдуулахаас урьдчилан сэргийлэх арга хэмжээ авч ажиллах.	Үйл ажиллагааны туршид	
2. Ахуйн болон барилгын хог хаягдлыг зориулалтын тусгай саванд ангилан ялгаж хадгалан, Хан-Уул дүүргийн ТҮК-тай гэрээ байгуулж, тогтмол хугацаанд зайлуулж байх.	Сар тутам	
3. Төвийн эдэлбэр газар, барилга байгууламжийн орчны талбайг засаж тохижуулах, зүлэгжүүлэх, ногоон байгууламж байгуулах асуудлыг мэргэжлийн байгуулагаас зөвлөмж авч ерөнхий төлөвлөгөөнд заасны дагуу иж бүрэн тохижуулах.	Үйл ажиллагаа эхлэх үеэс	
4. Ажлын байрны эрүүл ахуйн болон галын дүгнэлтийг эрх бүхий байгууллагаар гаргуулж мөрдөж ажиллах.	Үйл ажиллагаа эхлэх үеэс	
5. Галын аюулаас хамгаалах багаж хэрэгслийг бэлэн байлгах, тэдгээрийг ашиглах арга зааврыг ажиллагсдад эзэмшүүлэх, галын аюулаас сэргийлэх анхааруулга санамж хийж, нүдэнд харагдахуйц газарт байрлуулах.	Үйл ажиллагаа эхлэх үеэс	
6. Үйлчилүүлэгчдийн тээврийн хэрэгсэл, авто машины зогсоолыг оновчтойгоор шийдвэрлэх, хатуу хучиллтай хийж тоос шороо үүсэх, хөрсийг элэгдэл эвдрэлд орохоос урьдчилан сэргийлэх арга хэмжээг авах.	Үйл ажиллагаа эхлэх үеэс	
8. Байгаль орчныг хамгаалах талаар авч хэрэгжүүлсэн арга хэмжээний талаар жил бүр тайлан гаргаж, Богд Хан уулын ДЦГ-ын Хамгаалалтын захиргаанд хүргүүлж байх.	Жил бүр	

9. Байгаль орчныг хамгаалах болон байгаль орчныг хамгаалахтай холбогдсон хууль тогтоомжийг биелүүлэх асуудлаар байгаль орчны болон эрүүл ахуй, халдвар судлал, хөдөлмөр, барилга, дэд бүтцийн хяналтын байгууллага, тэдгээрийн ажилтнуудтай байнга хамтран ажиллах.	Үйл ажиллагаа эхлэх үеэс	
10. Төслийн үйл ажиллагааны чиглэл болон хүчин чадал өөрчлөгдөх, өргөтгөл, шинэчлэл хийх, байршил өөрчлөгдөх тохиолдолд байгаль орчинд нөлөөлөх байдлын ерөнхий үнэлгээг дахин хийлгэж шийдвэр гаргуулж байх.	Тухай бүрт	

Ерөнхий үнэлгээний дүгнэлт гаргаж, нөхцөл, болзлыг тогтоосон:

БАЙГАЛЬ ОРЧИН, АЯЛАЛ ЖУУЛЧЛАЛЫН ЯАМНЫ ШИНЖЭЭЧ **Д.ШИЖИР-ЭРДЭНЭ**

Ерөнхий үнэлгээний дүгнэлтийг хүлээн зөвшөөрч, нөхцөл, болзлыг хэрэгжүүлэх үүрэг хүлээсэн:

Төсөл хэрэгжүүлэх ажлын хэсгийн ахлагч **Ц.ДАМДИН**

10. Technical Specifications (Infrastructure Design)

TECHNICAL SPECIFICATIONS

Water Supply and Drainage

Батлав : УСУГ-ын дарга..... Б.Пүрэвжав

УСУГ–ын Техникийн нөхцөл олгох комиссын 2009 оны 06-р сарын 04-ны өдрийн хурлаар хэлэлцэн ..100...тоот протоколыг үндэслэн зөвшөөрөв.

ТЕХНИКИЙН НӨХЦӨЛ № 100\ 09

1.Барилга объектын нэр:
Цэнгэг усны нөөц, биологийн төрөл зүйлийн төв, 3 давхар барилга

2.Барилга объектын байршил:
ХУД 11 - р хороо, Бурхан багшийн цэцэрлэгт хүрээлэнгийн урд

3.Цэвэр усны тооцоо:

А.Ахуйн ундааны хэрэгцээ	5.6 $м^3$/хоног
Б.Технологийн хэрэгцээ	$м^3$/хоног
В.Галын хэрэгцээ	2.5 л/сек
Г.Усалгаа	$м^3$/хоног
БҮГД	5.6 $м^3$/хоног

4.Цэвэр усны холболт хийх байршил, өндөржилт, шугамын диаметр:
Гүний худагтай

5.Усан хангамжийн эх үүсвэр :
А, Б, В, Дээд эх үүсвэр

6.Бохир усны тооцоо:

А. Ахуйн хэрэгцээнээс гарах	5.6 $м^3$/хоног
Б.Технологийн хэрэгцээнээс гарах	$м^3$/хоног
БҮГД	5.6 $м^3$/хоног

7.Бохир усны холболт хийх цэгийн байршилт, өндөржилт,шугамын диаметр:
ХААИС-ийн Ф300мм-ийн гол цуглуулах шугаманд холбох, холбох цэгийг ажлын зургийн явцад зөвшилцөх

8.Захиалагч ба зураг төсвийн байгууллагууд нь техникийн норм, дүрмийг хатуу баримтлах ба зураг төсвийг УСУГ-тай зөвшөөрөлцөх шаардлагатай.

9.Ус хангамж, ариутгах татуургын системийн угаалт, шахалт, туршилт тохируулгын ажлын зардлыг зураг төсөвт тусгах.

10.Энэ техникийн нөхцлийн хугацаа 2 жил. Хугацаа дууссан үед захиалагч байгууллага УСУГ–т хугацааг сунгуулах буюу дахин шинээр техникийн нөхцөл авах асуудлыг тавина.

11.Барилга угсралтын ажлын явцад зураг төсөвт өөрчлөлт орох шаардлага гарвал УСУГ-т хянуулж, зураг зохиогчийн зөвшөөрөлөөр гүйцэтгэнэ.

12.Техникийн нөхцлийн нэг хувийг хавсрагдах баримт бичгүүдийн хамт УСУГ-ын архивт өгнө.

13.Ус сувгийн байгууламжийг барихад газар доорхи шугам сүлжээг зөөх, дайрч гарах зам, бут сөөг эвдэх тохиолдолд сэргээхэд гарах зардлыг төсөвт тусгана.

14.Усны хэмжүүрийн зангилааг үзлэг хийхэд тохиромжтой ус тусгаарлагчтай гэрэлтүүлэгчтэй 5С-с дээш температуртай өрөөнд байрлуулна.

15.Бусад шаардлагууд : урьдчилан цэвэрлэх байгууламж хийх, засварлах одоо байгаа шугам сүлжээг өргөтгөх ба шинээр тавих, үйлдвэрийн газрын бохир усны найрлага гм.

Техникийн нөхцөлтэй холбоотой тавигдах шаардлага:

1.Ус бага зарцуулах тоног төхөөрөмж тавих,

2.Ажлын зураг хийж, УСУГ, НБХБТГ-ын ХТХЗХ– тэй зөвшөөрөлцөх.

3.Барилгыг шугам сүлжээнээс БНбД-ийн дагуу 5 метр зайд байрлуулах.

4.Гадна цэвэр усны худагт таслах хаалт тавих, хөлдөлтөөс хамгаалах,

5.Гадна цэвэр усны шугамын худагт галын гидрант суурилуулах

6.Узельд усны тоолуур болон монаметр суурилуулах,

16.Гүйцэтгэгч нь хангагч байгууллагын хяналтын инженерээр байнга хяналт тавиулж хяналтын карт хөтөлж ажиллана.

17.Цэвэр, бохир усны шугамын шахалт туршилтын үед хяналтын инженерийг заавал биечлэн байлцуулж ил, далд ажлын акт хөтлөнө.

18.16,17-р заалтуудыг биелүүлээгүй тохиолдолд барилга ашиглалтанд хүлээн авахгүй.

19.Хот, суурины ус хангамж, ариутгах татуургын ашиглалтын тухай хуулийн 9.3 –т зааснаар хангагч нь хэрэглэгчийн шугамнаас дамжуулан шинээр хэрэглэгч холбох техникийн нөхцөл олгосон тохиолдолд татгалзахгүй холбуулах.

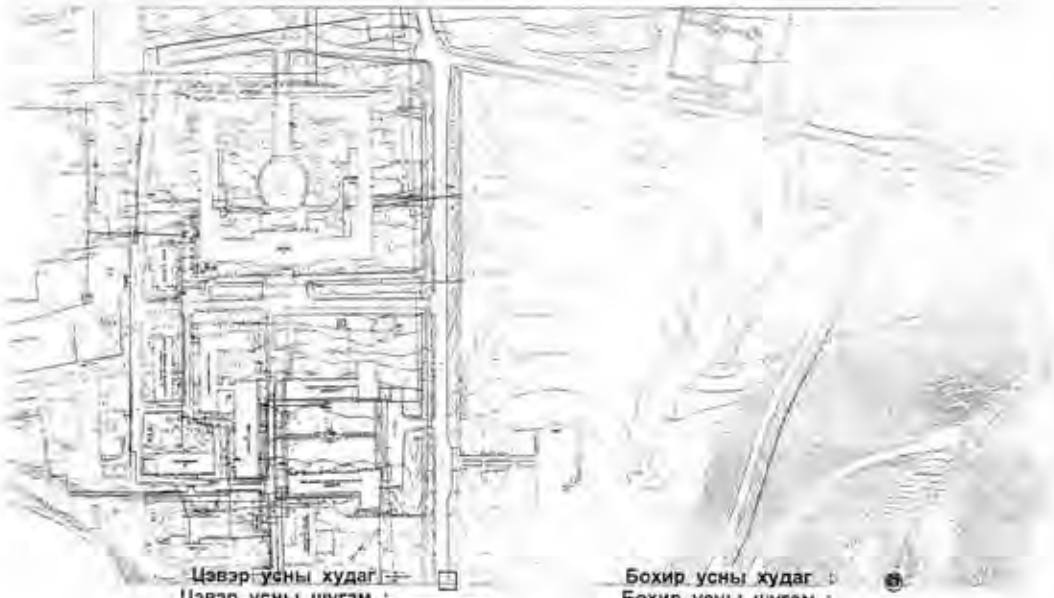
20.Объект барих дээд газрын шийдвэр:

БОЯ-ны сайдын 2005 оны 244-р тушаал

21.Техникийн нөхцөл явуулсан газрууд:

Улаанбаатар хотын Ус Сувгийн Удирдах Газар, БОАЖЯам

22.Техникийн нөхцөлтэй холбогдсон схем:



УСУГ-ын техникийн нөхцлийн инженер ..... Ж.ГАНЧИМЭГ

УЛААНБААТАР ДУЛААНЫ СҮЛЖЭЭ
ХУВЬЦААТ КОМПАНИ

БАЙГАЛЬ ОРЧИН
АЯЛАЛ ЖУУЛЧЛАЛЫН ЯАМНЫ
ТӨРИЙН ЗАХИРГААНЫ УДИРДЛАГЫН ГАЗАР-т

Хан-Уул дүүргийн 11 дүгээр хороо, Зайсангийн аманд баригдахаар төлөвлөж буй "Цэнгэг усны нөөц биологийн төрөл зүйлийн төв"-ийн барилгад дулаан холбох асуудлыг Эрчим хүчний газрын техникийн нөхцөл олгох ажлын хэсгийн 11 дүгээр сарын 09-ний өдрийн хурлаар хэлэлцээд "Монгуш" ХХКомпанийн 2009 оны 07 дугаар сарын 03-ны өдрийн 138 тоот албан бичгийг үндэслэн уг компанийн ЦТП-ийн 2 дугаар хэлхээнээс холбогч хийхийг зөвшөөрч байна.

Жич: Зураг төслийн нөхцөл гадна шугамын эзэмшигч байгууллагуудтай харилцан зөвшилцөх шаардлагатай.

ЕРӨНХИЙ ИНЖЕНЕР Ш.МӨНХЖАРГАЛ

МОНГОЛ ... БАЙГАЛЬ ...
2009.11.13
15:20

Батлав. "Улаанбаатар цахилгаан түгээх сүлжээ" ХК-ийн

гүйцэтгэх захирал /Д.Баттулга/

Техникийн нөхцөл № 553/2008

Огноо: 2008.06.02

1. Хэрэглэгчийн нэр, хаяг: БАЙГАЛЬ ОРЧИН, АЯЛАЛ ЖУУЛЧЛАЛЫН ЯАМ.
2. Хэрэглэгчийн байршил: ХУД 11-р хороо Богдхан уулын Зайсангийн аманд.
3. Ажил үйлчилгээний зориулалт: ЦЭНГЭГ УСНЫ НӨӨЦ, БИОЛОГИЙН ТӨРӨЛ ЗҮЙЛИЙН ТӨВИЙН БАРИЛГА.
4. Техникийн нөхцөл олгох үндэслэл: Улсын тусгай хамгаалалттай нутаг дэвсгэрт газар ашиглах 2007 оны 401 тоот гэрчилгээ.
5. Суурилагдсан чадал: 170кВт. /Зуун дал/
6. Тусгай заалтууд:

А. Олон улсын стандартын шаардлага хангасан, алдагдал багатай 2*250кВА чадалтай 10/0.4 кВ-ын трансформаторууд бүхий ХТП шинээр барьж тоноглох.

Б. 10 кВ-ын кабель шугамын угсралтын ажлыг УБЦТС ХК-ийн "БАРУУН ТҮГЭЭХ ТӨВ"-өөр гүйцэтгүүлэх.

В. Барилгыг кабель шугамын трасс, хамгаалалтын зурваст байрлуулахыг хориглоно.

Г. Энэхүү техникийн нөхцлийн дагуу тавигдах тоноглолууд, трансформатор, шугам нь өмнө нь ашиглагдаж байгаагүй шинэ тоноглол байх шаардлагатай.

Д. Угсралтын ажлын явцад УБЦТС ХК-ийн "БАРУУН ТҮГЭЭХ ТӨВ"-өөр хяналт тавиулж, холбогдох баримтыг бүрдүүлсэн байх.

7. Холбогдох цэг:

А. ХТП-226-ХТП-2002 хоорондын 10 кВ-ын А, Б кабелиудыг таслаж муфтлэн оруулж гарган тэжээх.

Б. УБЦТС ХК-ийн ашиглалтын кабель шугамуудыг оруулж, гаргаж байгаатай холбогдуулан ХТП-ийн 10кВ тал болон 10, 0.4 кВ-ын кабелиудыг УБЦТС ХК-ийн үндсэн хөрөнгөнд шилжүүлэн өгөх.

8. Тоолуур: Шинээр барих дэд өртөөний 0,4 кВ талын I ба II секцэнд бодит ба хуурмаг энерги тооцох 3 фазын электрон тоолуур суурилуулж, 0.4 кВ-ын тоолуур, гүйдлийн трансформаторыг цоож бүхий тусгай хайрцагт байрлуулах.
9. Доор дурьдсан техникийн даалгавар, хууль дүрмийг мөрдөх:

9.1 ХТП болон 10, 0.4 кВ-ын кабель шугамуудын байршлын зургийг эрх бүхий байгууллагаар хийлгэн, Хот байгуулалт стратеги бодлого төлөвлөлтийн хэлтсээр батлуулж, схем холболт, хүчин чадлыг тус компаниар хянуулах.

9.2. ХТП болон щитний газардуулгыг норм, дүрмийн дагуу хийлгэн холбогдох газраар шалгуулж, протокол авсан байх.

9.3. Цахилгаан угсралтын ажлыг мэргэжлийн байгууллагаар Аюулгүй Ажиллагааны Дүрэм болон Техник ашиглалтын дүрэм дагуу гүйцэтгүүлэх. "ЦАХИЛГААН ЭРЧИМ ХҮЧ ХЭРЭГЛЭХ" дүрмийн "Дөрөв"-ийн 22,23-р заалтын дагуу харьяа дүүргийн ЭХС-т

болон түгээх төвөөр хянуулж, протокол үйлдэн, шугам сүлжээнд холбогдох.
9.4. Хүчдлийн түвшингийн 5%-ийн хэлбэлзэлд зохицон тоноглол суурилуулах.
9.5. Засгийн газрын 2001 оны 263 тоот тогтоолоор батлагдсан ""Цахилгаан эрчим хүч хэрэглэх дүрэм"-ийн заалтыг мөрдлөг болгох.
9.6. "ЭРЧИМ ХҮЧНИЙ ТУХАЙ ХУУЛЬ"-ийн 30.1.8д заасны дагуу өөрийн ашиглалт үйлчилгээний зааг доторхи цахилгаан тоног төхөөрөмжиндөө байнга үзлэг шалгалт хийх. Хэвийн бус ажиллагаатай үед өөрсдийн хөрөнгөөр засвар үйлчилгээг хийлгэх.
9.7. Хэрэглэгч нь "ЭРЧИМ ХҮЧНИЙ ТУХАЙ ХУУЛЬ"-ийн дагуу өөрийн тоноглолоос тус компанийн зөвшөөрлөөр шинээр хэрэглэгч нэмж холбуулах үүрэгтэй.
9.8. Хэрэглэгч нь өөрийн эзэмшлийн цахилгаан тоног төхөөрөмжийн ашиглалт, акулгүй ажиллагааг харицуцсан ажилтныг томилох бөгөөд шугам сүлжээний хамгаалалтын зурвасын дотор гэр, орон сууц, барилга байгууламж барих, шугам сүлжээ өмчлөгч, эзэмшигчийн зөвшөөрснөөс бусад үйл ажиллагаа явуулахыг хориглоно.
9.9. "МОНГОЛ УЛСЫН ЭРЧИМ ХҮЧНИЙ ТУХАЙ ХУУЛЬ"-ийн болон "ЦАХИЛГААН ЭРЧИМ ХҮЧ ХЭРЭГЛЭХ ДҮРЭМ"-ийн заалтуудыг дагаж мөрдөх.
9.10. Цахилгаан эрчим хүчний тооцоог Улаанбаатар Цахилгаан Түгээх Сүлжээ Компанийн ХАН-УУЛ ХҮТ-тэй хийх.
9.12. Энэхүү техникийн нөхцлийн дагуу холболтыг 1 жилийн хугацаанд хийж, гүйцэтгэх бөгөөд энэ хугацаанд цахилгаан сүлжээнд холбогдоогүй тохиолдолд шинээр техникийн нөхцөл авна.

Түр техникийн нөхцөл.

1. Барилгын талбайд 0.4 кВ талдаа 3 фазын баталгаат, электрон тоолуур, 250 кВА чадалтай 10/0.4 кВ-ын трансформатор бүхий КТПН суурилуулах.
2. КТПН-ийг ХТП-226-ХТП-2002 10 кВ-ын А кабелийг оруулж гарган тэжээх.
3. Энэхүү түр техникийн нөхцөл зөвхөн барилга баригдаж байх хугацаанд хүчинтэй бөгөөд энэ хугацаанд барилгад ажил үйлчилгээ явуулахыг хориглоно.

Комиссын гишүүд: Н. Пунцагноров
Г. Базаргур
Д. Цэрэндамба
Т. Батцэцэг
Д. Ганбат

D:\DOC of GANBAA\My Documents\2009\Da-2\Барилай нөхцөл үзүүлэх

Telephone Line

Батлав. "МХС" ХХК-ны гүйцэтгэх захирал
С. Адъяасүрэн

Техникийн нөхцөл

Дугаар: **В** 2009/6/5
174/2009
Захиалагч байгууллага: Байгаль орчин, аялал жуулчлалын сайд

Хэрэглэгчийн нэр: Д. Гансүх
Харилцах утас: 266171

1. Байршил: ХУД-н 11-р хороо , Зайсан. Бурхант цэцэрлэгт хүрээлэнгийн урд
2. Холбооны хэрэгсээ: (урьдчилсан тооцоогоор)
а) телефоны тоо (ширхэгээр)
20 ш

3. Техникийн онцгой нөхцөл : Харилцаа Холбооны Зохицуулах Хорооноос олгогдсон үндсэн сүлжээ байгууллах бүрэн эрхийнхээ дагуу физик болон шилэн кабель татах техникийн нөхцлийг зөвхөн " МХС" ХХК олгох бөгөөд техникийн нөхцөлгүйгээр холбооны бүх төрлийн үйлчилгээ явуулах зорилготойгоор кабель татсан тохиолдолд тухайн барилгыг ҳүлээн авах техникийн болон улсын комисст хүвээн авахгүй болно

4. Техникийн үндсэн нөхцөл:

4.1 ХШ 425-н хүрээнд байгаа SD 15-4 худагнаас барилгад барилга хүртэл зам хөндлөн шилээр 2 янзтай суваглал байгуулах / зам доогуур учраас 2 янзтай хийх /
4.2 ХШ 425-д 100х2 блок суурилуулан 100 хослор цэнэглэн оролтын худаг хүртэл татаж, уг худагт 80 хосыг 2 метр уруттайгаар нөөцөнд үлдээх.
4.3 20 хосыг одоо байгаа болон шинээр хийсэн суваглалаар татаж барилгад оруулж төгсгөлийн төхөөрөмжинд холбоно
4.4 Уг техникийн нөхцөлд зориулж гр 81-н 97-100-р хосуудыг нөөцлөв
4.5 Харилцаа Холбооны Зохицуулах Хороонооос олгосон холбооны кабель шугамыг угсралт хийх тусгай зөвшөөрөлтэй аж ахуйн нэгжээр гүйцэтгүүлэх шаардлагатай.

5. Зураг төсөвт зайлшгүй тусгах шаардлагатай технологийн онцгой нөхцлүүд:

5.1. Шинээр хийгдэх кабель, шугамын угсралтын ажлын зураг төсвийг зохиохдоо Монгол улсын стандарт MNS 5276:2003, MNS 5279:2003, MNS 5280:2003, MNS 5277:2003 тоот ерөнхий шаардлагууд болон ДБХ-ийн сайдын 1995 оны 127-р тушаалаар батлагдсан зааврыг бариллан гүйцэтгэх.
5.2 Хэрэглэгчийн шугамын угсралтын ажил барилгын зураг төсөвт байхгүй, хийгдээгүй бол захиалагчид мэдэгдэж төсөв зураг оруулах.
5.3 Кабелийн хуваарилах хайрцагны байрлалыг хэрэглэгчийн шугамын нягтралыг цэгт болон техник ашиглалтын шаардлага хангахуйц байдлаар оновчтой суурилуулахаар технологийн норм хэмжээг зааж оруулах.

6. Угсралтын ажлын үед тавигдах нөхцөл:

6.1. Угсралтын ажил эхлэхээс өмнө зураг төсөв техникийн нөхцлийн дагуу хийгдсэн эсэхийг "МХС" ХХК-ны ХСГ-н ШКБТТ-аар (утас: 70112399) хянуулан, батлагаат авсан байх.
6.2. Газар шорооны ажил гүйцэтгэхдээ харьяалагдах тухайн ШК нэгжийн ахлах инженер болон инженерээр шалгуулан далд ажлын акт үйлдэж, хүлээн авах ажлын актанд хавсаргах.
6.3. Угсралтын газар шорооны ажил эхлэхийн өмнө хотын инженерийн шугам сүлжээний техникийн ашиглалт хариуцдаг мэргэжлийн байгууллагуудад трассын зургийг хянуулан зөвшөөрөлцсөн байх.
6.4. Кабель шугамын угсралт болон газар шорооны ажлыг эхлэхдээ ХСГ-н ерөнхий инженерээс албан ёсны мэдэгдлийг авч тухайн харьяалагдах ШК нэгжийн ахлах инженерийн хяналтан дор гүйцэтгэнэ .
6.5. Угсралтын ажлыг гадна агаарын температур -5 градусаас илүүгүй хүйтний нөхцөлд гүйцэтгэх.
6.6. Шинээр татсан кабель болон кробконд тэмдэглэгээг бүрэн хийсэн байх.
6.7. Угсралтын ажлын явцад захиалагч, ашиглалтын байгууллагатай хамтарч хянаж

тавьж угсралтын технологийн шаардлагыг бүрэн хангуулсан байх.

6.8 Хэрэглэгч холбох нөхцлийг бүрдүүлэхийн тулд барилгын дотор монтажийн угсралтыг Монгол улсын стандарт MNS 5471:2005 ерөнхий шаардлагын дагуу хийгдсэн тохиолдолд гадна холбооны угсралтын ажлыг хүлээж авна.

7. Захиалагчид ашиглалтын үед тавигдах шаардлага:

Шинээр хийгдсэн холбооны худаг сувагчлал болон кабель шугам нь хотын телефоны кабель шугамын сүлжээнд холбогдох тул:

7.1. Танай эзэмшил газарт суурилуулагдсан холбооны сувагчлал болон кабелийг гадны механик гэмтлээс хамгаалах.

7.2. Уг сувагчлалын трассыг цааш нь үргэлжлүүлэх болон шинээр кабель татах боломжийг хангах.

7.3. Худаг сувагчлалд техникийн ашиглалтыг хоногийн ямар ч үед шуурхай гүйцэтгэх боломжоор бүрэн хангах.

8. Техникийн нөхцлийг **Байгаль орчин, аялал жуулчлалын сайдын** 2009 оны 4-р сарын 17-ны өдрийн 5/1009 тоот албан бичгийг үндэслэн олгов .

9. Угсралтын ажил дууссаны дараа хэмжилт , шалгалт хийлгэж тогтоосон журмын дагуу ХСГ-т техникийн актаар хүлээлгэн өгсний дараа сүлжээнд холбох зөвшөөрлийг авна.

10. Энэхүү техникийн нөхцөл нь олгосон өдрөөс хойш 1 жилийн хугацаанд хүчинтэй.

Техникийн нөхцөлтэй танилцсан :

" МХС" ХХК-ны Сүлжээ хөгжлийн газрын дарга

.... Ч. Золбаяр

Техникийн нөхцлийг хянан баталгаажуулсан ;

Хотын сүлжээний газрын дарга

.... Н. Цэрэнбаатар

Боловсруулсан ;

Хотын сүлжээний газрын ахлах инженер

....Ж. Зоригоо