

Environmental Monitoring Report

Semiannual Report
December 2020

Mongolia: Skills for Employment Project

Prepared by the Ministry of Labor and Social Protection for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 31 December 2020)

Currency unit	–	togrog (MNT)
MNT1.00	=	\$0.00035
\$1.00	=	MNT2,853

ABBREVIATIONS

ADB	–	Asian Development Bank
C-EMP	–	contractor's environmental management plan
EMP	–	environmental management plan
IEE	–	initial environmental examination
PIU	–	project implementation unit
TVET	–	technical and vocational education and training
UB	–	Ulaanbaatar city

WEIGHTS AND MEASURES

1 km (kilometer)	–	1,000 meters
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GLOSSARY

<i>soum</i>	–	smallest administrative unit of a province
district	–	smallest administrative unit of Ulaanbaatar City

NOTE

In this report, "\$" refers to US dollars.

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LOAN MON 3243: SKILLS FOR EMPLOYMENT PROJECT

SEMIANNUAL ENVIRONMENTAL MONITORING REPORT (INTERNAL) FOR SECOND HALF-YEAR OF 2020



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1 INTRODUCTION

1.1 ABOUT THE REPORT

This semiannual environmental monitoring report (internal) is prepared by the project implementation unit (PIU) and covers second half of year 2020 from 1 July to 30 December.

This report covers seven category B technical and vocational education and training (TVET) schools (Bayanchandmani, Darkhan-Urguu, Arkhangai, Zuunkharaa, Ulaanbaatar [UB] Polytechnical College, and Khuvsgul) where there were active construction works in the reported period. Environmental management plan (EMP) implementation activities at the seven schools and routine environmental monitoring performed by the contractors under supervision of the PIU during the second half of 2020 have been summarized in the report. Civil works at the TVET school in Bayankhongor have completed at the end of the previous reporting period, thus no longer need to be included in this report.

Further going, the PIU will prepare a final environmental monitoring report which will summarize environmental protection activities, mitigation measures, and routine environmental monitoring activities when the project construction activities will be completed in April 2021.

This environmental monitoring report is comprised of following sections:

- ❖ Section 1 of the report provides report structure, project location, and the construction progress achieved in the reported period.
- ❖ Section 2 describes environmental responsibilities of the project within the framework of domestic regulations and Asian Development Bank (ADB) requirements.
- ❖ Section 3 summarizes mitigation measures implemented by the contractor in each aspect of safeguard, such as air quality, water, soil resources, health and safety and COVID-19 prevention.
- ❖ Section 4 provides results of the environmental monitoring activities carried out during the reported period.
- ❖ Section 5 provides the conclusion and recommendations for the next reporting period.

This report is prepared by the PIU environmental consultant E.Khasar with inputs from the Contractors.

1.2 ABOUT THE PROJECT

The loan agreement for the Skills for Employment project was signed between ADB and the Government of Mongolia on 8 April 2015. The project will introduce several innovations to Mongolia's TVET system, including (i) support for sector sub-councils, industry and professional associations, and employers to set standards for TVET programs and courses; (ii) creation of an independent competence assessment and certification system; (iii) strengthening of workplace training for TVET students and teachers; (iv) introduction of career guidance in junior secondary TVET Schools prior to tracking; and (v) development of a credit transfer system between senior secondary education, tertiary education, and TVET within a national qualifications framework.

The impact of the project will be increased employment in the three priority sectors (agriculture, construction, and road and transportation). The outcome of the project will be enhanced responsiveness of the TVET system to labor market demand in the three priority sectors. No changes in the project planning occurred since the design phase.

The estimated project closing date is 30 May 2021.

1.2.1 Project Outputs

The project will have five components and 10 outputs as described below.

Component 1: Establishment of Industry-driven Technical and Vocational Education and Training System in the Three Priority Sectors

The project will, in collaboration with employers, and industry and professional associations, support the establishment of an industry-driven TVET system in the three priority sectors by (i) developing occupational and other related standards for key occupations; and (ii) establishing accredited assessment and certification centers with rehabilitated and/or refurbished testing facilities, adequate testing equipment, and accredited center personnel.¹ The role of sector sub-councils in developing, approving, and registering standards, and assessment and certification, will be reviewed and strengthened.

- ✚ Output 1: Standards for Key Occupations Developed in Collaboration with Employers, and Industry and Professional Associations in the Three Priority Sectors
- ✚ Output 2: Assessment and Certification Centers Established in Collaboration with Employers, and Industry and Professional Associations in the Three Priority Sectors

Component 2: Upgrading of Selected Technical and Vocational Education and Training Providers to Implement Competency-based Training and Assessment in the Three Priority Sectors

The project will support the upgrading of selected TVET providers to implement competency-based training and assessment for the key occupations in the three priority sectors by (i) providing up-to-date equipment for the key occupations, and rehabilitating and/or refurbishing training facilities for at least 20 selected TVET providers;² (ii) delivering training programs to managers and teachers of the selected TVET providers; and (iii) strengthening industry partnerships with

¹ The methodology and procedures for developing standards are in Appendix 4 of the PAM. The criteria and procedures for institutions to be accredited as assessment and certification centers are in Appendix 5 of the PAM. The indicative list of 15 key occupations is Appendix 10 of the PAM.

² The procedures for selecting TVET providers and the list of pre-selected TVET providers are in Appendix 6 of the PAM.

the selected TVET providers based on sector or subsector human resource development plans and guidelines for teacher industry placement and student internships. The selected TVET providers will be trained to conduct graduate tracer studies and employer satisfaction surveys to adjust competency-based training programs and courses to employers' needs.

- ✚ Output 3: Selected Technical and Vocational Education and Training Providers Upgraded
- ✚ Output 4: Managers and Teachers of Selected Technical and Vocational Education and Training Providers Trained
- ✚ Output 5: Industry Partnerships with Selected Technical and Vocational Education and Training Providers Strengthened

Component 3: Establishment of Training Systems for Technical and Vocational Education and Training Managers and Teachers in the Three Priority Sectors

The project will support the establishment of systems for training TVET managers and teachers for the key occupations in the three priority sectors by developing (i) a training program for managers in industry-driven TVET management at the Academy of Management; and (ii) industry-based technical and vocational skills training programs for teachers of the key occupations that combine institution-based, short-term training courses at accredited technical and vocational skills training institutions and workplace training through industry placement.³ The sector sub-councils, industry and professional associations, and employers will be involved in developing training modules and materials, and selecting master technical and vocational skills trainers in the key occupations.

- ✚ Output 6: Training Programs for Managers in Industry-driven Technical and Vocational Education and Training Management Developed
- ✚ Output 7: Technical and Vocational Skills Training Programs for Teachers of the Key Occupations Developed

Component 4: Support for Secondary Education Career Guidance and TVET Schools that Specialize in Technology

The project will support the (i) implementation of eighth and ninth grade civic education curriculum that integrates career guidance modules in all TVET schools; and (ii) establishment of 30 independent senior secondary TVET schools which will offer occupation-oriented technology elective courses.⁴ Credits of the elective courses can be transferred to higher education institutions. Quality assurance mechanisms, entrance exams, and evaluation and assessment systems will be developed and implemented.

- ✚ Output 8: Eighth and Ninth Grade Civic Education Curriculum that Integrates Career Guidance Modules Implemented
- ✚ Output 9: Independent Senior Secondary TVET Schools that Offer Occupation-oriented Technology Elective Courses Established

³ The strategy for establishing a training system for TVET managers is in Appendix 7 of the PAM. The strategy for establishing a technical and vocational skills training system for TVET teachers is in Appendix 8 of the PAM.

⁴ The concept of independent senior secondary TVET Schools with occupation-oriented technology elective courses is presented in Appendix 9 of the PAM.

Component 5: Establishment of Effective Project Management System

The project will support the establishment of an effective project management system by developing the capacity of the executing agency and implementing agencies for project implementation, and monitoring and evaluation.

- ✚ Output 10: Capacity for project implementation and monitoring and evaluation developed

1.3 COSTS AND FINANCING

The project is estimated to cost \$26.78 million, including physical and price contingencies, taxes and duties of \$1.20 million, and financing charges during implementation. The total project cost will be financed by an Asian Development Fund loan of \$25 million equivalent, and the Government of Mongolia will fund the remaining \$1.20 million for taxes and duties through exemption, and \$2.60 million for contingencies.

TABLE 1: PROJECT INVESTMENT PLAN
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Output 1: Establishment of industry-driven TVET system	4.58
2. Output 2: Upgrading of selected TVET providers	10.61
3. Output 3: Establishment of training systems	0.40
4. Output 4: Support for career guidance and technology specialization	6.03
5. Output 5: Establishment of project management system	1.82
Subtotal (A)	23.44
B. Contingencies^c	2.60
C. Financing Charges During Implementation^d	0.74
Total (A+B+C)	26.78

TVET = technical and vocational education and training.

^a Includes taxes and duties of \$1.20 million to be financed from government resources (\$1.20 million, tax exemptions) and ADB loan resources (in the case of civil works contracts). The financing of taxes and duties is necessary to avoid delays in procurement. The amount of taxes and duties is determined on the grounds that (i) the amount will not represent an excessive share of the project investment plan, (ii) the taxes and duties apply only to ADB-financed expenditures, and (iii) the financing of taxes and duties is relevant to the success of the project.

^b In end-2019 prices.

^c Physical contingencies computed at 5.0% for the original base investment costs prepared in mid-2014. Price contingencies computed on average at 2.19% on the original foreign exchange costs and 2.79% on the original local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Interest during implementation for ADB loan has been computed at the interest rate of 2% to be covered under loan proceeds.

Source: Asian Development Bank estimates.

1.4 LOCATION OF THE PROJECT

The figure below shows the location of the TVET schools on the map of Mongolia while the table below provides administrative divisions and distance from Ulaanbaatar city for the TVET schools. The current project sites are the same as the original ones mentioned in the initial environmental examination (IEE) and EMP reports.

FIGURE 1: LOCATION MAP OF CATEGORY B SUBPROJECTS

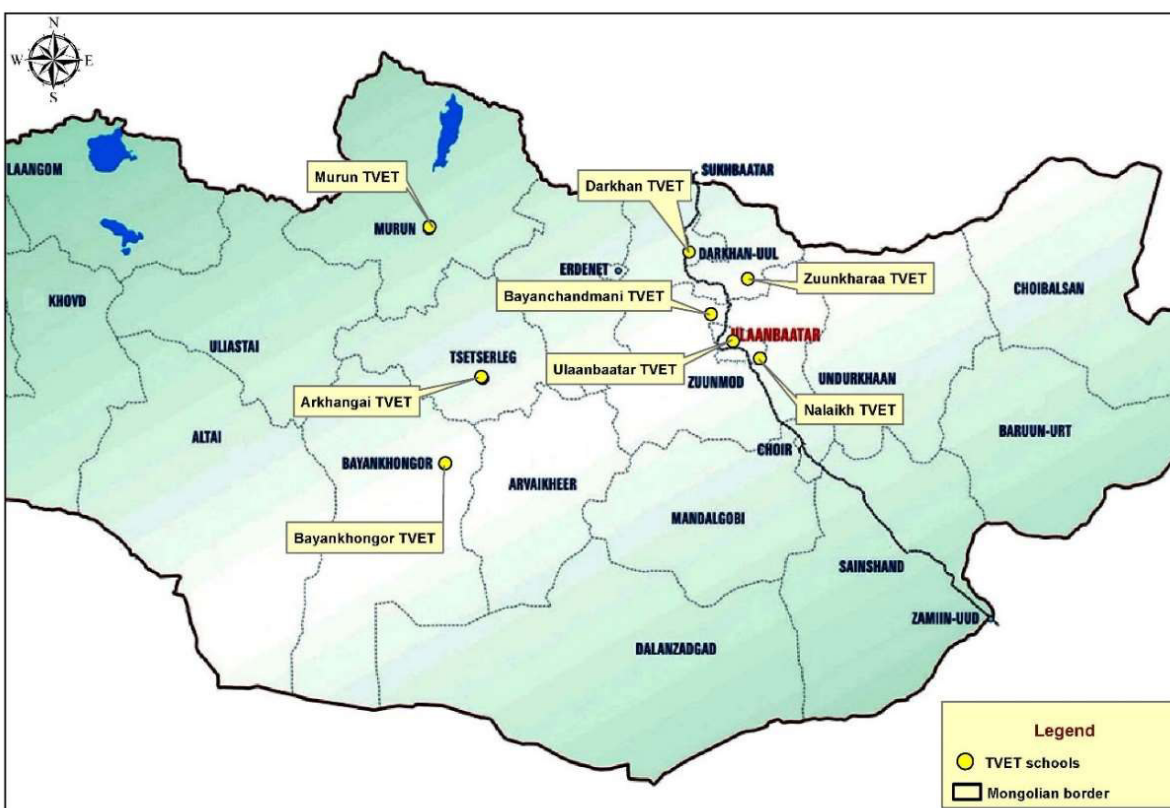


TABLE 2: LOCATION OF TVET SCHOOLS

No	Name of TVET Schools	Location	Distance from Ulaanbaatar
1	Darkhan-Urguu TVET	Darkhan city	221 km
2	Zuunkharaa Polytechnical College	Zuunkharaa town, Selenge province	198 km
3	Ulaanbaatar Polytechnical college	Bayangol district, Ulaanbaatar	0 km
4	Nalaikh TVET	Nalaikh ditrict, Ulaanbaatar	35 km
5	Arkhangai TVET	Tsetserleg town, Arkhangai province	460 km
6	Khuvsgul TVET	Murun town, Khuvsgul province	685 km
7	Bayanchandmani TVET	Bayanchandmani soum, Tuv province	72 km
8	Bayakhongor TVET	Bayankhongor town, Bayankhongor province	620 km

1.5 CONSTRUCTION PROGRESS

Progress update on construction works carried out at the seven TVET schools (Arkhangai, Khuvsgul, Zuunkharaa, Darkhan-Urguu, Bayanchandmani, Nalaikh and UB Polytechnical College) during the reported period of July to December 2020 are shown in the table below. Construction works have been completed at five TVET schools: at Khuvsgul, Arkhangai and Bayanchandmani TVET schools in October, and at UB and Nalaikh TVET schools in December. As for the two other TVET schools (Zuunkharaa TVET and Darkhan-Urguu TVET), exterior construction activities, including frame work, roofing, window works, utility pipeline works, have been completed with only interior finishing works left. It should be noted that the construction activities were stopped indefinitely due to the government decision to impose a strict lockdown starting from 11 November 2020 until 11 January 2021.

Construction works at Bayankhongor TVET school was completed in June 2020 and there were no remaining activities in the reported period, thus Bayankhongor TVET is not included in this report.

TABLE 3: CONSTRUCTION PROGRESS DESCRIPTION

TVET School	Contractor	Construction works carried out in the second half of 2020	Construction progress as of 2020.11.10
Arkhangai	Tengeriin Doloon Od LLC	Construction of workshop building, 400m long utility pipelines and warehouse facility have been completed in October. The contractor has applied to the Arkhangai Province Land and Urban Development Department for a handover on 28 October 2020. Pending for the state commission's final inspection visit.	100% completed
Bayanchandmani	Huh Hairhan Trade LLC	Construction of workshop buildings for wool and auto maintenance trainings, winter greenhouse, vegetable warehouse, utility pipelines have been completed. The contractor has applied to the Tuv Province Land and Urban Development Department for a handover on 28 October 2020. Pending for the state commission's final inspection visit.	100% completed
Darkhan-Urguu	Ikh Nayad Hugjil LLC	Maintenance of student dormitory and existing workshop buildings have been completed. All outdoor construction works for the new extension building, including frame work, roofing, window works, utility pipeline works have been completed. Only indoor works left.	78%
Zuunkharaa	S&A Trade LLC	Maintenance works at the existing classroom building is completed. Construction of winter greenhouse, vegetable warehouse, water well and power line at the Agro-park 1 are nearly completed with 90% progress rate. Maintenance of the workshop building at the Agro-park 2 is nearly completed with 80% progress rate. Power connection and indoor works left.	80%
UB Polytechnical College	Ted Construction LLC	Construction of a new workshop building have been completed. The contractor has applied to the MUB Land and Urban Development Department for a handover on 28 October 2020. Pending for the state commission's final inspection visit.	100% completed
Khuvsgul	Green Resource Construction LLC	Construction works at the Agro-park have been completed: power line works, workshop building, well house and fence installation. Construction of a new classroom building, winter greenhouse and maintenance of existing dormitory building are completed. The new facilities are already handed over to the State Commission in November.	100% completed
Nalaikh	Nutgiin Buyan Group LLC	Construction new classroom and workshop buildings and garage building for the road faculty have been completed. The contractor has applied to the MUB Land and Urban Development Department for a handover in December 2020. Pending for the state commission's final inspection visit.	100% completed

2 ENVIRONMENTAL AND SOCIAL RESPONSIBILITIES

2.1 ADB REQUIREMENTS

The project is classified under category B for environment. The ADB IEE which was prepared in 2018 provided a description of the physical environment for the project area, assessment of impacts, environmental management plan, and grievance redress mechanism for the construction period. The IEE concluded that the project physical components are relatively small with limited minor environmental adverse impacts, there is no surface water near the site and planned away from the residential and commercial areas. Along with the IEE, a detailed EMP was developed including mitigation measures for anticipated risks. The IEE concluded that the adverse environmental impacts can be successfully mitigated through the use of best practices and appropriate technologies. Implementation of the environmental management, mitigation, and monitoring programs are included in the IEE to ensure compliance with ADB and Mongolian government environmental guidelines and procedures.

2.2 DOMESTIC ENVIRONMENTAL REQUIREMENTS

The most relevant laws applicable to the project are Law on Subsoil (last amended in 2015), Law on Soil protection and prevention from desertification (last amended in 2015), Law on Water (last amended in 2017), Law on Air (last amended in 2018), Law on Hygiene (last amended in 2017), Law on Waste (last amended in 2017), Law on Labor (last amended in 2017), Law on Occupational Safety and Hygiene (last amended in 2018), and Law on Fire Safety (last amended in 2015).

There are “Mongolian National Standards”- MNS in effect in Mongolia. The standards prescribe effluent/wastewater standard, ambient air, noise, water quality, soil quality, industrial effluent discharge, boiler emission, etc. Key standards applied for this project include the following: (i) Water quality general requirement (MNS 4586:1998); (ii) Air quality. General technical requirements (MNS 4585:2016); (iii) Drinking water. Hygiene requirements, evaluation of quality and safety (MNS 0900:2018); (iv) Waste water quality supplied to sanitation network (MNS 6561-2015), (v) Determining disposal location of waste water (MNS 6230-2010); (vi) Occupational hygiene and work condition (MNS 4990-2015); (vii) General Requirements on personal protective equipment (MNS 4931-2000); (viii) General requirement on fire safety (MNS 4244-1994); (ix) General requirement on transportation of domestic waste (MNS 5344-2011); (x) Soil Quality, Soil Pollutant Elements and Substances Standard (MNS 5850:2019); (xi) Ambient Noise Standard (MNS 4585:2016); and (xii) Labor safety and hygiene. General requirement for noise level and occupational safety (MNS 5002:2000).

2.3 ENVIRONMENTAL RESPONSIBILITIES

The roles of entities involved in environmental management are as follows:

- ❖ The Ministry of Labor and Social Protection is the executing agency for the project;
- ❖ The PIU is responsible for overall contract administration and day-to-day project supervision including environmental management. The PIU is also responsible for

supervising contractors by way of the environmental specifications and special environmental provisions contained in the civil works contract.

- ❖ The environmental specialist hired by the PIU is responsible for ensuring the EMP, including monitoring requirements, are implemented effectively.
- ❖ The civil works contractors selected for the category B TVET schools are responsible for implementation of the EMP.

3 IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PLAN

The PIU employed Mr. Khasar (from March 2018 till project completion) as its environmental specialist during project implementation period. The environmental specialist is responsible for coordinating environmental works for the project, supervision of EMP implementation by the contractors, and periodic site visits and environmental monitoring. During the reported period the PIU environmental specialist visited all construction sites to check environmental compliance and conduct environmental monitoring.

During the outdoor construction activities that lasted between March and October of 2020, there were no students, teachers, and school workers at the TVET schools due to a COVID-19 quarantine imposed by the government. This has led to a lower scale of anticipated project impacts on human environment including dust and noise disturbance and potential injury and safety concerns for school workers and students. When the TVET schools were opened for class training activities in October, exterior construction activities were completed with only interior finishing works left.

3.1 MANAGEMENT OF SOIL RESOURCES

No borrow pits or quarry sites are being used for the construction works. Spoil from foundation excavation is collected temporarily at the construction sites before being transported to the local landfill sites appointed by the local government. No oil spills were recorded in the reported period. The following table shows status for spoil removal and distance to the local landfill sites.

Healthy topsoil excavated from earthworks was used for refilling of utility pipeline channels while remaining inert materials were transported to the approved central landfill sites of the relevant areas/towns.

TABLE 4: SPOIL REMOVAL STATUS AND DISTANCE TO LOCAL LANDFILL

No.	TVET School	Status of Spoil Removal	Distance to the Local Landfill Site
1	UB Polytechnical College	Spoil from foundation and inert materials from demolition of old workshop building removed to the appointed local landfill site.	8 km to Ulaanchuluut landfill site
2	Bayanchandmani TVET	Soil extracted from foundation works for vegetable warehouse removed to the appointed local landfill site.	4.5 km Central dumpsite of Bayanchandmani soum center
3	Darkhan-Urguu TVET	Soil extracted from foundation works for workshop building removed to the appointed local landfill site.	16.5 km to Central dumpsite of Darkhan city
4	Zuunkharaa TVET	Soil extracted from foundation works for vegetable warehouse removed to the appointed local landfill site.	10 km to Central dumpsite of Zuunkharaa town
5	Khuvsgul TVET	Soil extracted from foundation works for new classroom building removed to the appointed local landfill site.	6 km to Central dumpsite of Murun
6	Arkhangai TVET	Soil extracted from foundation works for vegetable warehouse removed to the appointed local landfill site.	3 km to central landfill site of Tsetserleg town

No.	TVET School	Status of Spoil Removal	Distance to the Local Landfill Site
7	Nalaikh TVET	Soil extracted from foundation works for workshop building removed to the appointed local landfill site.	3.5 km to central dumpsite of Nalaikh

Photo 1: Foundation Earthworks at the Construction Sites

Bayanchandmani TVET



Arkhangai TVET



UB Polytechnical College



Nalaikh TVET



3.2 AIR QUALITY MANAGEMENT

Following mitigation measures have been implemented to minimize dust emission from construction activities during the construction period:

- ❖ Water is sprayed at the active construction sites during dry days
- ❖ Material storage site are at least 300 meters away from residential areas

Following measures were undertaken to reduce emission of pollutants:

- ❖ All vehicles, equipment, and machinery used for construction are regularly inspected and

**Photo 3: Wastewater Septic Tank and Workers' Toilet
Zuunkharaa TVET Khuvsgul TVET**



3.4 FLORA

There are no ecologically sensitive areas located nearby the TVET schools and the construction sites. All TVET schools are located within 5–10 km from the nearest protected areas (national parks, sanctuaries, and forest reserves) as shown in the table below.

TABLE 6: DISTANCE TO ECOLOGICALLY SENSITIVE AREAS

No	Sub-projects	Location	Distance from Protected Areas (km)
1	Nalaikh TVET	Nalaikh district	5.1 km from Bogdkhan SPA, 8 km from Terelj SPA
2	Khuvsgul TVET	Murun town, Khuvsgul province	79 km
3	Ulaanbaatar Polytechnical College	Bayangol district, UB city	6.8 km from Bogdkhan SPA
4	Zuunkharaa TVET	Zuunkharaa town, Mandal soum	30 km from Noyon Uul SPA
5	Bayanchandmani TVET's farm yard	Bayanchandmani soum, Tuv province	More than 100 km
6	Arkhangai TVET	Tsetserleg town	3 km from Bulgan Mount SPA
7	Darkhan-Urguu TVET	Darkhan city	More than 100 km

During the design phase, it was estimated that 10 poplar trees at UB Polytechnical College and 5 poplar trees near the female student dormitory of Zuunkharaa TVET will be removed to clear construction sites. In order to avoid cutting trees, the proposed winter greenhouse was relocated

to the Agro-park site of the Zuunkharaa TVET school which ensured no trees are removed. At the UB Polytechnical College, 15 poplar trees were removed to clear the construction site for new workshop building. All these trees were within the school premises and owned by the TVET school. It is planned that the same number of poplar trees will be replanted at the school premise in 2021 spring once the construction works are completed.

3.5 NOISE AND VIBRATION CONTROL

Most of the construction activities that generate noise, such as foundation works, construction of building frameworks, roofing, secondary connections to the existing utility networks and transportation of inert materials have been carried out between April and August when the TVET schools were under quarantine with no teachers or students staying in the campus.

The following mitigation measures have been implemented to minimize noise and vibration:

- ❖ Source control: Maintain all equipment and machineries in good working condition; undertake regular equipment maintenance;
- ❖ Construction time for construction works such as cutting, welding, concrete mixing, and mechanical compaction is arranged at 7:00 AM–8:00 PM only.
- ❖ During material transport vehicles into the scene, it is prohibited to whistle.
- ❖ Transport loading and unloading of construction materials were carried out well within the construction site in the school premises which ensured minimal disturbance on the surrounding community.
- ❖ Noise monitoring is conducted to ensure noise levels at construction sites are within the allowed limit.

3.6 PALEONTOLOGICAL AND ARCHEOLOGICAL RESOURCES

There were no paleontological and archeological resources in the vicinity of construction sites. There were no chance finds during the reported period.

3.7 WASTE MANAGEMENT

The following solid waste management procedures were implemented by the contractors:

- ❖ Domestic and waste construction materials are disposed to a designated temporary waste collection point near the construction site within the school premises.
- ❖ Construction staff are not allowed to throw any waste at or near the construction areas.
- ❖ All contractors signed "Agreement on waste removal" with the respective local civil service agencies who send their waste transport truck to the construction site weekly. Names and locations of local landfill sites where the construction waste is removed are specified in the waste agreements.

The construction staff use the existing wastewater and toilet facilities of the TVET schools, thus no additional facilities need to be constructed.

3.8 WORKPLACE SAFETY

3.8.1 Occupational Health and Safety

All contractors employ safety engineers who carry out the following works daily:

- ❖ Check workplace arrangements and identify risks
- ❖ Check the health and safety principles, determine actions to be taken to improve workplace safety
- ❖ Dress inspection before the construction workers go out to workplace
- ❖ Check the abnormal status and risk factors for the heavy machineries and equipment and determine preventive measures
- ❖ If any risks are found, inform it to field supervisors and recommend appropriate mitigation measures

The following safety measures were implemented at the construction sites:

- ❖ All construction staff are provided with personal protection items including helmet, gloves, and glasses.
- ❖ Construction workers at high-altitude works are wearing seat belts in the work of climbing and plastering.
- ❖ If any security hazards are found on the construction site, safety engineers are notified and the issue is addressed immediately.
- ❖ The weekly construction team meeting agenda includes safety topics.

Photo 4: Workers in PPE at the Construction Sites

UB Polytechnical College



UB Polytechnical College**Nalaikh TVET****3.8.2 Public Health and Safety**

Since all construction sites are located within the premise of TVET school campuses that are surrounded with fencing, the main receptors of the health and safety impacts and risk are the TVET school community, including teachers and students. However, all TVET schools in Mongolia went under quarantine in order to prevent a potential outbreak of COVID-19 starting from 27 January 2020. There were no teachers, students, and other school workers present at the TVET schools between January 27 and 1 October 2020. Most of the construction activities have been completed before the school activities resumed on 1 October 2020. There were no accidents and injuries during the reported period.

Following measures have been undertaken to mitigate health and safety risks to the public which mainly consists of school workers and students:

- ✚ Warning signs placed at all construction sites to provide caution to people
- ✚ Access barrier or fencing placed around the active construction sites to prevent access to the sites
- ✚ Electric fittings and fire safety devices located within secure casings

Photo 5: Warning Signs Placed at the Construction Site, Zuunkharaa TVET School



Photo 6: Access Barriers Placed at the Construction Sites

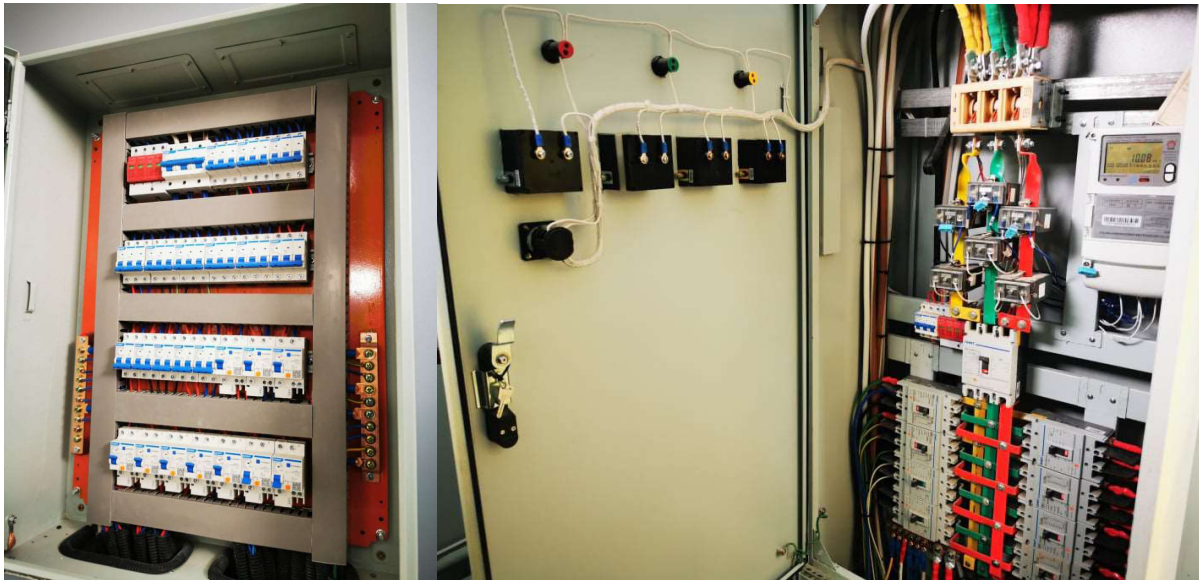
Darkhan-Urguu TVET



Nalaikh TVET



Photo 7: Nalaikh TVET: Electric Fittings and Fire Safety Devices Located Within Secure Casings



Following measures have been undertaken to mitigate traffic safety issues involving the construction trucks transporting construction materials:

- ✚ The contractors were required to contract with licensed and well-experienced truck drivers.
- ✚ All truck drivers are aware of the traffic and safety rules.
- ✚ Construction trucks speed limit is 20 km/h within the school premises.
- ✚ Construction sites are provided with designated access gates that do not disturb other receptors
- ✚ Construction materials and equipment transported shall be secured and fastened with strips and belts to prevent from falling down

Photo 8: Construction Materials Secured with Belts on Transportation Trucks

Khuvsgul TVET

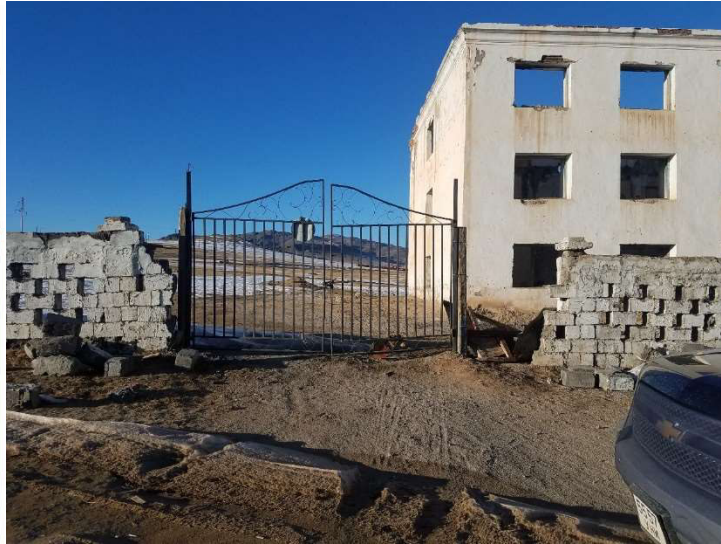


Photo 9: Designated Access Gates Provided to the Construction Sites

UB Polytechnical College



Arkhangai TVET



4 HEALTH AND SAFETY MANAGEMENT PLAN IN RESPONSE TO THE COVID-19 PANDEMIC

4.1 RISK-BASED ASSESSMENT

4.1.1 Risk Assessment Framework and Process

A workplace-specific risk assessment related to the COVID-19 situation was conducted with following steps:

1. Identified a workplace-specific pandemic coordinator or team.
2. Defined the teams' roles and responsibilities for preparedness and response and prevention planning.
3. Implementation of the Prevention and Response Plan.

4.1.2 Risk Factors Identification and Findings

Three primary routes of transmission are anticipated for COVID-19, all of which need to be controlled. These include contact, droplet, and airborne transmission.

Breathing in droplets in the air

It is advised that coronavirus is not transmitted through airborne transmission, however, if somebody coughs or sneezes they do generate droplets which are airborne for at least a short period of time but do not float in the air and generally fall to the ground within 1 to 2 meters. Anybody who is near the individual may risk breathing in these droplets. Social distancing (maintaining 2 meters of distance from other people at all time) will reduce the risk of this occurring.

Close contact

Close contact refers to physical contact with another person, for example shaking hands or hugging. When people cough or sneeze droplets may deposit on their skin or clothing, especially if they cough or sneeze into their hands. People who are carriers of COVID-19 may transfer the virus from their hands or clothing to others during close contact.

Surface contact

Surfaces can become contaminated when droplets carrying COVID-19 deposit on them, or when they are touched by a person who is infected. Surface contact involves a worker touching a contaminated object such as a table, doorknob, telephone, or computer keyboard or tool, and then touching the eyes, nose, or mouth. Surface contact is important to consider because COVID-19 can persist for several days on surfaces.

The following risk assessment table is adapted from regulation guidelines from the WHO. Using this guideline as a reference, it was determined that the risk level of the workers is low when they maintain social distancing. The workers work on a construction work site and have little contact with the general public.

4.1.3 Risk Screening and Risk Categorization

Protection methods	Low risk Workers who typically have no contact with people infected with COVID-19	Moderate risk Workers who may be exposed to infected people from time to time in relatively large, well ventilated workspaces	High risk Workers who may have contact with infected patients, or with infected people in small, poorly ventilated workspaces
Hand hygiene	Yes (washing with soap and water, using an alcohol-based hand rub, or using hand wipes that contain effective disinfectant)	Yes (washing with soap and water, using an alcohol-based hand rub, or using hand wipes that contain effective disinfectant)	Yes (washing with soap and water, using an alcohol-based hand rub, or using hand wipes that contain effective disinfectant)
Disposable gloves	Not required	Not required (unless handling contaminated objects on a regular basis)	Yes, in some cases (for example, when working directly with COVID-19 patients)
Aprons, gowns, or similar body protection	Not required	Not required	Yes, in some cases (for example, when working directly with COVID-19 patients)
Eye protection - goggles or Face shield	Not required	Not required	Yes, in some cases (for example, when working directly with COVID-19 patients)
Airway Protection - respirators	Not required	Not required (unless likely to be exposed to coughing and sneezing)	Yes (minimum N95 respirator or equivalent)

4.2 POLICY, REGULATION, AND GUIDANCE

4.2.1 International Practice Guidance

- Considerations for public health and social measures in the workplace in the context of COVID-19 - World Health Organization
- Working safely during COVID-19 in construction and other outdoor work - UK Government

4.2.2 Domestic Regulations and Policy Principles

The Government of Mongolia has activated the State Emergency Committee (SEC) in January, 2020, on the basis of the Disaster Protection Law. The Disaster Protection Law (in place since 2017) authorizes the National Emergency Management Agency and SEC to direct emergency policies and measures via the Government of Mongolia and regional emergency committees. The legal enforcement of SEC-led precautionary measures enabled a unified and focused administration of COVID-19 disaster management.

Government of Mongolia assembled an emergency session and made a decision to close down schools and social activities starting from 27 January 2020 even though there were no registered cases in the country that time. In addition to travel, all major public engagements and gatherings, were prohibited. Another notable early stage response to the COVID-19 outbreak was the closure

of all educational institutions, including all TVET schools, at all levels, throughout the country, with traditional teaching replaced by distance learning approaches. TVET schools and universities resumed their class trainings from 1 October 2020.

First domestically transmitted case in Mongolia was confirmed on 9 November 2020 and the Government imposed a curfew in all major settlement areas in Mongolia which included all seven sub-project areas of Skills for Employment project. All public places including the TVET schools were shut down again. The curfew was extended till 11 January 2021.

Predominantly spreading health promotion messages via public media, the SEC initiated a one-window policy to provide accessible and reliable information from only one source. A one-window policy included official information and announcements communicated daily at a set time (11:00am) through all communication channels and media. The information provided included periodic and daily latest updates on self-isolation and quarantine, test results from suspected cases, general health recommendations, and the global status of the pandemic. The Ministry of Health has been issuing frequent text message alerts nationwide using all four mobile telephone carriers. The alert messages include recommendations on avoiding unnecessary domestic and international travel, self-isolation for incoming travelers, nutritional advice, and personal hygiene and protective measures.

4.2.3 Applicable Local Requirements and Procedures

In collaboration with UNICEF, the Ministry of Health of Mongolia has issued Guidelines on prevention from COVID-19. This serves as the main guidelines for the public on prevention of the pandemic.

Here are the best practices that construction professionals have implemented into their everyday work routines.



All construction site professionals maintain physical distancing rules of 6 feet (2 meters) or more.



Rigorous Pre-screening. Anyone exhibiting signs of sickness is not allowed on site. No one is allowed on site unless they've completed a pre-access screening.



In the rare occasion they have to work closely, proper PPE such as masks, gloves and eyewear is worn.



Extensive hand washing, sanitization, and personal hygiene is expected and commonplace.



Tools are not shared and are sanitized between each use.



All tools, surfaces and vehicles are disinfected continually and between shifts.



Shifts are staggered to reduce the number of people on site when possible. Meetings are kept short and small, with physical distancing in place.



No vehicle sharing. Construction professionals take their own transportation to and from the site.



Just like grocery stores the number of people in confined spaces is strictly controlled and limited. Traffic flows throughout the site are managed to ensure appropriate physical distancing.



Sites are separated into zones to separate crews and trades, whenever possible.

4.3 INSTITUTIONAL ARRANGEMENT AND STRENGTHENING

4.3.1 Institutional Setup and Responsibilities for Health & Safety Plan Implementation

Employers, workers, and their organizations collaborated with health authorities in the prevention and control of COVID-19. The employers, in consultation with workers and their representatives, have undertaken preventive and protective measures, such as engineering and administrative controls and provision of personal protective equipment and clothing for occupational safety and health and infection prevention and control. Such measures at the workplace not involved any expenditure on the part of workers.

Workers have followed occupational safety and health and infection prevention and control procedures, avoided exposing others to health and safety risks, participate in related training provided by the employer and report immediately to their supervisor any situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health.

Cooperation between management and workers and their representatives were an essential element of workplace-related prevention measures (such as through workers' safety delegates, safety and health committees, and collaboration with providing information and training) and respecting the right and duties of workers and employers in occupational safety and health.

COVID-19 and other diseases, if contracted through occupational exposure, could be considered as occupational diseases.

4.3.2 Health and Safety Technical Support and Guidance

The construction workforce was given guidance in the following:

- The risk of exposure to COVID-19, and the signs and symptoms of the disease
- Safe work procedures to be followed, including hand washing, social distancing
- Cough/sneeze etiquette
- Location of washing facilities, including dispensing stations for alcohol-based hand rubs
- How to seek first aid

- How to report an exposure to or symptoms of COVID-19

4.3.3 The necessary budgetary resources for mitigation actions

The COVID-19 outbreak is a major public health emergency, and it is an unforeseen, inevitable and insurmountable force majeure event. The loss and increase in project construction costs caused thereby shall be carried out in accordance with the provisions on force majeure stipulated in the construction contract.

4.4 PREVENTION AND CONTROL, AND MITIGATION MEASURES

4.4.1 Prevention practices and mitigation measures for workers

Following hygiene practices were implemented among the construction workforce:

- Clean hands with soap and water before eat and at the end of the workday, during the work shift whenever possible, and when you get home from work.
- Do not shake hands; avoid physical contact.
- Do not share food, drinks, cigarettes, personal hand tools.
- Do not touch one's face, eyes, nose, mouth with unwashed hands (i.e., smoking, drinking water, eating, etc.)
- Follow good respiratory etiquette by covering one's mouth and nose with a disposable tissue or the crease of your elbow when you sneeze or cough.
- Regularly clean and disinfect commonly touched surfaces and tools

Photo 10: Wearing Mask and Disinfecting Hands with Sanitizers are Mandatory at the Construction Sites



Following measures were implemented by the contractors' management toward prevention of COVID-19:

- Limit the number of persons in routine meetings – a chair spacing between workers.
- Use COVID-19 Self-Assessment tool questions to verify that workers are not feeling sick and so they are aware of what the symptoms are so they can self-monitor.
- Disinfect used pens, tables, chairs, etc., after each orientation.
- Following points were included discussed frequently:
 - social distancing of 2 meters
 - hygiene and location of hand washing and hand sanitization stations.
 - what the company is doing at the site to promote a safe workplace and remind them that their health is important to us.
 - where the safety posters are located.
 - the importance of reporting to their supervisor if they are feeling unwell and leaving the project.

Photo 11: Hand Sanitizers and Thermometers Used at the Construction Sites on Daily Basis



Ажилчдын халууныг өглөө, оройд тогтмол хэмжиж ажиллаж байна.



Health Verification of Workers

- At start of shift, Supervisor to confirm the health status of contractor workers through
- discussion with Contractor supervisor and notify HSE Manager of any issues. Document issues.
- Supervisor, each day, to ask for updates of workers that have left the site for self-isolation. Document changes.
- At end of shift, Supervisor to confirm the health status of contractor workers through discussion with Contractor supervisor and notify HSE Manager of any issues.
- Use the COVID-19 Self-Assessment tool. Document any issues.

Hoist Operations

- Outside the hoist: Post signage and remind the workers to maintain social distancing 1.8 m (6 feet) while they are waiting to enter the hoist.
- Inside the hoist: Maintain social distancing (as best as possible) and reduce the number of passengers at any one time.
- Passengers to face the outside of the hoist to avoid being inside each other's breathing zone.
- The Operator has the option to wear an N95 mask.
- Provide the operator with disinfectant to routinely disinfect commonly touched items – call buttons, door handles, etc.

When wearing gloves

- Do not touch your face, eyes, or mouth
- Make sure that hands are washed thoroughly or disinfected with hand sanitizer as soon as possible after gloves are removed

Meetings at Site

- Hold outside in open areas.

Risk communication, training and education

- Provide posters, videos and electronic message boards to raise awareness of novel Coronavirus and promote safe personal behavior in the workplace and to elicit feedback from workers on preventive measures and their effectiveness.
- Use official sources such as government agencies and WHO to provide regular information on novel Coronavirus risks and highlight the effectiveness of safeguards against rumors and misinformation.
- Special attention should be given to contact and interaction with vulnerable and marginalized groups of workers, such as informal and migrant workers, domestic workers, subcontractors and self-employed workers, and workers working under digital service platforms.

Project Offices

- Restrict Access. Place contact information (phone #) outside on door.
- Limit the number of workers or restrict who is allowed to enter these offices.
- Maintain the social distance requirements.
- Do not touch items – “keep your hands to yourself”.

- Do not share keyboard or mouse, pens, clipboards or documents.
- Disinfect commonly touched items like door handles, chairs, tables, etc.
- Handrails leading up to the trailer or office: Do not slide your hand down them. Routinely disinfect.

Lunchroom

- Post signage to remind workers to wash or disinfect their hands before and after eating.
- Stagger coffee/lunch breaks to reduce the number of workers in the lunchroom at the same time.
- Maintain social distancing by staggering seating arrangement, or don't eat in the lunchroom
- Remove garbage often.
- Routinely disinfect the tables and other commonly handled items.
- Ensure sufficient fresh air supply to reduce "recirculating" the air inside the lunchroom.
- Separate PPE and clothing that is hung up in the lunchroom to avoid touching.
- If you have to take your spare work clothing home, place it in a plastic bag and do not take it out of the plastic bag until it goes into the laundry to be washed – ideally separately.

Work locations

- Maintain social distancing between workers.
- Stagger work crews to reduce the number of people on site, if possible
- Where possible, reduce the number of partner workers.
- Don't mix workers on crews.

Tools

- Avoid sharing tools or equipment.
- If you have to share equipment, clean and disinfect points of contact on the equipment. Example: on a shared extended work platform, before use wipe down controls, gate, guardrails and any other parts touched by hands. Disinfect it when you are done.

First Aid Treatment

- First Aid Attendants to wear mask, face shield and medical gloves when treating workers.
- If conscious and capable of answering, ask the worker's local healthy code to verify current status of their health.

4.4.2 The prevention of transmission from and to the affected communities

Workers coming from other places should be with a health pass. Private recruitment of casual workers without health information is strictly prohibited to prevent the entry of epidemic situations.

Check worker's 14-day contact history who are entering the site. Strictly implement the prevention and control measures according to the epidemic situation classification

Strictly implement the real-name system management, establish personnel health record, conduct body temperature measurement twice a day in the morning and evening, check workers' health status, and make records one by one.

Enclosed management must be implemented on the construction site to strictly control personnel access, and strictly check and register the personnel and vehicles enter the site."

4.4.3 Information Disclosure and Consultation

Each contractor implemented an emergency response plan for the prevention and control of epidemic conditions at the construction site, and practice the plan accordingly. Once individuals who have been potentially exposed to the virus, or who are exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion are spotted, the site manager should call 103 promptly and report to local healthy and construction authorities for further arrangement.

4.5 EMERGENCY PREPAREDNESS AND RESPONSE

4.5.1 Possible cases of COVID-19

- Individuals who have been potentially exposed to the virus, or who are exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion are instructed to:
 - Not come to work;
 - Contact their supervisor and/or human resources department;
 - Stay at home and self-isolate; and
 - Contact local health authorities for further direction.

Such individuals are required to follow the directions of the local health authority and may not return to work until given approval by the proper health authorities.

- Individuals who begin to display flu-like symptoms on site are instructed to avoid touching anything, take extra care to contain coughs and sneezes, and return home immediately to undergo self-isolation as directed by the local health authority.
- All areas on site potentially infected by a confirmed or probable case are barricaded to keep individuals two meters away until the area is properly cleaned and disinfected.

4.5.2 Response plans

- All contractors were prepared plan to respond to partial or complete shutdown of construction sites or in the case of a severe limitation of site operations. This has happened on 11 November 2020 when the Government of Mongolia ordered a public curfew.

4.6 MONITORING, INSPECTION AND REPORTING

4.6.1 Monitoring and Inspection Programs

Screening at entry of construction site

Before entering the site, individuals were required:

- ✚ They are not currently exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion;
- ✚ They have not returned from outside of Mongolia within the past 14 days;
- ✚ To the best of their knowledge, they have not been in contact with someone with a confirmed or probable case of COVID-19; and
- They have not been working on a site that was shut down due to the virus.

Responses are to be kept private and treated as sensitive medical information.

- ✚ Individuals who are at increased risk of serious illness (due to age, pregnancy, or other medical condition) are not to be permitted on site.
- ✚ Workers who are not authorized to access the site are to be safely transported directly back home, or to a preferred location of self-isolation. When unable to do so themselves, a vehicle and driver will be arranged for them.
- ✚ When transporting a potentially ill individual, both driver and passenger are to be given masks and nitrile gloves. The passenger is to sit in the backseat, and the driver is to open and close the doors for them.

4.6.2 Updating of the Risk Assessment and Health and Safety Management Plan

By the end of the year 2020, there were 1200 confirmed COVID-19 cases in Mongolia. Of which, 850 cases were domestically transmitted. All public places, including the TVET schools and construction sites are closed at least until 11 January 2021. Construction works have been already completed at 5 out of 7 TVET schools. Some interior finishing works left at the two remaining schools.

Once the lockdown is lifted and construction works are allowed to resume, the PIU will review the exposure control plan again and update it as necessary, in response to the updated information and guidelines by the Ministry of Health.

4.6.3 Documenting and Reporting

All contractors keep records of monitoring and inspection, instructions provided to workers regarding COVID-19, as well as exposure reports and first aid records.

There were no COVID-19 cases and suspected cases detected amongst the construction workforce in the reported period.

5 POST-CONSTRUCTION SITE CLEANING

Out of the 8 category B TVET schools, where new workshop buildings are built, construction works have been completed at six TVET schools: Bayankhongor TVET school in June, Khuvsgul, Arkhangai and Bayanchandmani TVET schools in October, and UB TVET and Nalaikh TVET schools in December.

When the construction works are completed at the 6 schools, the contractors performed post-construction site cleaning in order to ensure the construction sites are in a good condition before handover to the state commission. These include:

- ✚ Removal of remaining construction and domestic waste to approved landfill sites with waste trucks of urban service agencies in their respective areas
- ✚ Removal of construction equipment and devices with their own trucks
- ✚ Site restoration works by conducting reshaping and smoothing the land surface at the affected spots

Photo 12: Construction Sites after Site Cleaning

UB Polytechnical College: Newly Built Workshop Building and Removal of Equipment



Arkhangai TVET: Newly Built Workshop Building and Vegetable Warehouse



Khuvsgul TVET: Newly Built Classroom Building**Bayanchandmani TVET: Newly Built Winter Greenhouse and Workshop Building****Nalaikh TVET: New built workshop building and garage for road construction faculty**

Bayankhongor TVET: Newly Built Workshop Building for Auto Maintenance Faculty

Post-construction site-cleaning status for category B schools where extension buildings are constructed is provided in the table below.

TABLE 7: POST-CONSTRUCTION SITE CLEANING STATUS FOR CATEGORY B SCHOOLS

No	Name of TVET schools	Removal of remaining waste	Removal of construction equipment	Site restoration works	Post-construction site-cleaning status
1	Khuvsgul TVET	+	+	+	Completed.
2	UB-Polytechnical College	+	+	+	Completed.
3	Bayanchandmani TVET	+	+	+	Completed.
4	Nalaikh TVET	+	+	+	Completed.
5	Arkhangai TVET	+	+	+	Completed.
6	Bayankhongor TVET	+	+	+	Completed.
7	Darkhan-Urguu TVET				

8	Zuunkharaa TVET	Interior finishing works at the newly built extension building left	To be completed in 2021 Q2
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6 ENVIRONMENTAL MONITORING

Environmental monitoring was carried out at seven TVET schools (Arkhangai, Nalaikh, Khuvsgul, Zuunkharaa, Darkhan-Urguu, Bayanchandmani, and UB Polytechnical College) during the active construction period. Air quality, soil quality and water quality samplings and measurements were taken at the construction sites in July, August and September during the exterior construction activities that generate impacts on surrounding environment such as earthworks, construction of extension building and workshops and installation of utility pipelines.

Construction works completed at 5 TVET schools (Arkhangai, Nalaikh, Khuvsgul, Bayanchandmani, and UB Polytechnical College) in October while all exterior construction works completed at the other two schools (Zuunkharaa and Darkhan-Urguu) with only interior finishing works left. Therefore, monitoring of ambient air quality, soil quality and water quality were not required in the month of October.

Government of Mongolia has imposed a public lockdown starting from 11 November 2020 due to outbreak of locally transmitted COVID-19 cases and construction activities were stopped since then. Therefore, interior finishing works at the two remaining schools will be carried over to the year 2021.

6.1 MONITORING PARAMETERS

As specified in the project EMP requirements, following parameters for environmental monitoring measurements were tested in order to identify potential changes in key environmental parameters:

- ❖ Air quality: Dust concentration level (mg/m^3), contents of NO_2 and SO_2
- ❖ Noise emission level (decibel)
- ❖ Soil test: contents of Ni, Cd, Pb, Zn, Cr, and Cu
- ❖ Water quality: turbidity, hardness, pH, and contents of chemical ingredients

6.2 MONITORING RESULTS

6.2.1 Air quality monitoring

Air quality measurements were made at the active construction sites. The monitoring specialists have measured concentration levels of sulfur dioxide, nitrogen dioxide, and total suspended particulate (PM 10) with average value of 30-minute duration. Air quality monitoring test results are shown in the table below.

TABLE 8: ASSESSMENT OF AIR QUALITY MONITORING, JULY 2020

No.	TVET Schools	Date of measurement	Average Values Measured, 30-minute duration, mg/m ³			Assessment
			SO ₂	NO ₂	PM10	
1	UB TVET	2020.07.02	0.021	0.045	0.270	No pollution
2	Bayanchandmani TVET	2020.07.08	0.027	0.050	0.063	No pollution
3	Darkhan-Urguu TVET	2020.07.23	0.007	0.012	0.120	No pollution
4	Zuunkharaa TVET	2020.07.16	0.006	0.026	0.078	No pollution
5	Nalaikh TVET	2020.07.31	0.016	0.025	0.147	No pollution
6	Arkhangai TVET	2020.07.20	0.008	0.024	0.180	No pollution
7	Khuvsgul TVET	2020.07.01	0.003	0.018	0.078	No pollution
National Standard on Air Quality MNS 4585:2016			0.450	0.200	0.500	

TABLE 9: ASSESSMENT OF AIR QUALITY MONITORING, AUGUST 2020

No.	TVET Schools	Date of measurement	Average Values Measured, 30-minute duration, mg/m ³			Assessment
			SO ₂	NO ₂	PM10	
1	UB TVET	2020.08.24	0.019	0.066	0.064	No pollution
2	Bayanchandmani TVET	2020.08.18	0.015	0.038	0.052	No pollution
3	Darkhan-Urguu TVET	2020.08.30	0.005	0.035	0.056	No pollution
4	Zuunkharaa TVET	2020.08.14	0.007	0.014	0.104	No pollution
5	Nalaikh TVET	2020.08.31	0.021	0.038	0.084	No pollution
6	Arkhangai TVET	2020.08.19	0.003	0.015	0.096	No pollution
7	Khuvsgul TVET	2020.08.30	0.003	0.024	0.073	No pollution
National Standard on Air Quality MNS 4585:2016			0.450	0.200	0.500	

TABLE 10: ASSESSMENT OF AIR QUALITY MONITORING, SEPTEMBER 2020

No.	TVET Schools	Date of measurement	Average Values Measured, 30-minute duration, mg/m ³			Assessment
			SO ₂	NO ₂	PM10	
1	UB TVET	2020.09.15	0.021	0.045	0.270	No pollution
2	Bayanchandmani TVET	2020.09.22	0.012	0.106	0.084	No pollution
3	Darkhan-Urguu TVET	2020.09.28	0.003	0.048	0.066	No pollution
4	Zuunkharaa TVET	2020.09.29	0.002	0.009	0.055	No pollution
5	Nalaikh TVET	2020.09.28	0.016	0.022	0.075	No pollution
6	Arkhangai TVET	2020.09.09	0.003	0.015	0.016	No pollution
7	Khuvsgul TVET	2020.09.07	0.003	0.015	0.092	No pollution
National Standard on Air Quality MNS 4585:2016			0.450	0.200	0.500	

The air quality monitoring results show that there are no pollution from sulfur dioxide and nitrogen dioxide at the subproject sites. The measured levels of dust, sulfur dioxide, and nitrogen dioxide were well within the standard level required by the national standard MNS4585:2016.

6.2.2 Noise monitoring

Noise measurements were made at the active construction sites with average value of 30-minute duration. Maximum allowed level of daytime noise level in residential area is 55 decibels. All measured noise levels comply to the standard requirement. Noise monitoring test results are shown in the table below.

TABLE 11: ASSESSMENT OF NOISE MONITORING

No.	TVET Schools	Measured Noise Levels, Decibel			Assessment
		Jul	Aug	Sep	
1	UB TVET	50.0	53.6	48.2	No pollution
2	Bayanchandmani TVET	51.7	50.0	42.9	No pollution
3	Darkhan-Urguu TVET	48.2	46.7	37.3	No pollution
4	Zuunkharaa TVET	46.9	44.8	40.4	No pollution
5	Nalaikh TVET	42.0	54.7	53.0	No pollution
6	Arkhangai TVET	39.8	32.1	33.8	No pollution
7	Khuvsgul TVET	53.5	43.4	41.7	No pollution
National Standard on Noise MNS 4585:2016		55			

Measured noise levels were within the standard requirement at all construction sites.

6.2.3 Soil quality monitoring

In order to ensure no soil pollution is caused by the project activities, soil samples were taken at the active construction sites within the TVET school premises. Soil contamination analysis were made at the authenticated local laboratories. As specified in the project EMP, soil quality monitoring frequency is once a year.

TABLE 12: ASSESSMENT OF SOIL QUALITY MONITORING

No.	TVET Schools	Contents of heavy metal pollutants, mg/kg					Assessment
		Ni	Cu	Pb	Zn	Cr	
1	UB TVET	0.00	9.52	25.9	58.5	0.00	No pollution
2	Bayanchandmani TVET	24.5	20.1	39.4	53.9	36.5	No pollution
3	Zuunkharaa TVET	33.5	5.27	6.86	2.83	2.29	No pollution
4	Bayankhongor TVET	11.9	7.99	23.7	44.6	20.3	No pollution
5	Arkhangai TVET	18	17.2	20.9	34	5.23	No pollution
6	Khuvsgul TVET	6.0	5.5	13.0	41	13.0	No pollution
7	Darkhan-Urguu TVET	33.5	5.27	6.86	2.83	2.29	No pollution
National Standard on Soil Quality MNS 4585:2016		150	100	100	300	150	

Based on the soil quality test results, it can be concluded that soil cover in the sub-project sites are free of any pollution during the reported period.

6.2.4 Water quality monitoring

In order to ensure drinking water quality for the construction workforce, water samples were taken from the water supply sources at each school. Drinking water for the construction workforce is supplied from the existing water wells owned by the TVET schools in Arkhangai, Bayanchandmani and Khuvsgul while the other TVET schools in Ulaanbaatar, Zuunkharaa, Nalaikh, Nalaikh and Darkhan are already connected to the centralized water supply systems.

Water quality test results are assessed in below tables.

TABLE 13: WATER QUALITY TEST RESULTS, JULY 2020, PART-1

No.	Water Test Parameters	Measurement unit	UB TVET	Nalaikh TVET	Darkhan Urguu	Khuvsgul TVET	National Standard on Water Quality MNS 0900:2018
			Measured values				
1	Hardness	mg-equiv/l	0.8	0.77	2.53	4.22	7
2	pH		7.01	6.26	7.79	6.51	6.5-8.5
	Ca	mg/l	12.02	8.5	37.2	36.7	100
4	Mg	mg/l	0.4	4.2	25.9	29.1	30
5	Na+K	mg/l	5.66	6.5	21.0	47.9	-
6	SO ₄	mg/l	3.5	4.6	19.5	45.8	500
7	Cl	mg/l	4.96	0.4	6.2	17.8	350
8	HCO ₃	mg/l	48.82	32.9	124.9	297.7	-
9	NH ₄	mg/l	0.1	0.06	0.01	0.5	1.5
10	NO ₂	mg/l	0.00	0.00	0.001	0.01	1
11	NO ₃	mg/l	2.41	2.3	0.09	0.5	50
12	Fe	mg/l	0.00	0.09	0.00	0.2	0.3

TABLE 14: WATER QUALITY TEST RESULTS, JULY 2020, PART-2

No.	Water Test Parameters	Measurement Unit	Bayanchandmani TVET	Zuunkharaa TVET	Arkhangai TVET	National Standard on Water Quality MNS 0900:2018
			Measured Values			
1	Hardness	mg-equiv/l	2.5	4.6	1.58	7
2	pH		8.47	6.88	8.2	6.5-8.5
	Ca	mg/l	34.07	64.5	24.5	100
4	Mg	mg/l	0.4	18.5	4.4	30
5	Na+K	mg/l	51.76	23.4	48.5	-
6	SO4	mg/l	20.9	26.7	7.7	500
7	Cl	mg/l	9.22	19.1	24.2	350
8	HCO3	mg/l	225.77	299.2	163.5	-
9	NH4	mg/l	0.1	0.05	0.01	1.5
10	NO2	mg/l	0.01	0.011	0.01	1
11	NO3	mg/l	9.98	0.54	0.78	50
12	Fe	mg/l	0.00	0.1	0.01	0.3

Based on the laboratory test results, tested values of all parameters are within the standard level, thus it can be concluded that there was no water pollution at the construction sites in the month of July.

TABLE 15: WATER QUALITY TEST RESULTS, AUGUST 2020, PART-1

No.	Water Test Parameters	Measurement unit	UB TVET	Nalaikh TVET	Darkhan Urguu	Khuvsgul TVET	National Standard on Water Quality MNS 0900:2018
			Measured values				
1	Hardness	mg-equiv/l	0.9	1.5	2.42	4.24	7
2	pH		7.08	7.2	7.45	6.5	6.5-8.5
	Ca	mg/l	12.02	15.4	39.4	36.5	100
4	Mg	mg/l	0.40	9.4	27.9	29.4	30
5	Na+K	mg/l	2.59	20.8	15.6	47.7	-
6	SO4	mg/l	0.68	2.7	29.5	46.2	500
7	Cl	mg/l	5.67	4.6	7.1	17.6	350
8	HCO3	mg/l	48.82	31.7	141.9	297.7	-

No.	Water Test Parameters	Measurement unit	UB TVET	Nalaikh TVET	Darkhan Urguu	Khuvsgul TVET	National Standard on Water Quality MNS 0900:2018
			Measured values				
9	NH4	mg/l	0.00	0.16	0.03	0.5	1.5
10	NO2	mg/l	0.00	0.004	0.001	0.01	1
11	NO3	mg/l	2.41	0.79	0.00	0.5	50
12	Fe	mg/l	0.00	0.02	0.00	0.00	0.3

TABLE 16: WATER QUALITY TEST RESULTS, AUGUST 2020, PART-2

No.	Water Test Parameters	Measurement Unit	Bayanchandmani TVET	Zuunkharaa TVET	Arkhangai TVET	National Standard on Water Quality MNS 0900:2018
			Measured Values			
1	Hardness	mg-equiv/l	3.70	5.7	1.69	7
2	pH		8.05	7.02	7.95	6.5-8.5
	Ca	mg/l	54.11	83.8	22.36	100
4	Mg	mg/l	0.40	18.5	4.91	30
5	Na+K	mg/l	12.71	33.3	45.4	-
6	SO4	mg/l	5.80	18.5	7.2	500
7	Cl	mg/l	9.22	24.2	23.9	350
8	HCO3	mg/l	231.88	324.5	151.2	-
9	NH4	mg/l	0.10	0.04	0.01	1.5
10	NO2	mg/l	0.01	0.017	0.037	1
11	NO3	mg/l	4.82	1.09	0.7	50
12	Fe	mg/l	0.00	0.14	0.04	0.3

Based on the laboratory test results, tested values of all parameters are within the standard level, thus it can be concluded that there was no water pollution at the construction sites in the month of August.

TABLE 17: WATER QUALITY TEST RESULTS, SEPTEMBER 2020, PART-1

No.	Water Test Parameters	Measurement unit	UB TVET	Darkhan Urguu	Khuvs gul TVET	National Standard on Water Quality MNS 0900:2018
			Measured values			
1	Hardness	mg-equiv/l	0.9	2.53	4.20	7
2	pH		7.08	7.79	6.47	6.5-8.5
	Ca	mg/l	12.02	37.2	36.9	100
4	Mg	mg/l	0.40	25.9	28.7	30
5	Na+K	mg/l	2.59	21.0	47.8	-
6	SO4	mg/l	0.68	19.5	45.7	500
7	Cl	mg/l	5.67	6.2	17.5	350
8	HCO3	mg/l	48.82	124.9	296.5	-
9	NH4	mg/l	0.00	0.01	0.5	1.5
10	NO2	mg/l	0.00	0.001	0.01	1
11	NO3	mg/l	2.41	0.09	0.5	50
12	Fe	mg/l	0.00	0.00	0.00	0.3

TABLE 18: WATER QUALITY TEST RESULTS, SEPTEMBER 2020, PART-2

No.	Water Test Parameters	Measurement Unit	Bayanchandmani TVET	Zuunkharaa TVET	Arkhangai TVET	National Standard on Water Quality MNS 0900:2018
			Measured Values			
1	Hardness	mg-equiv/l	3.90	5.70	1.04	7
2	pH		8.30	6.68	8.18	6.5-8.5
	Ca	mg/l	50.1	93.0	16.8	100
4	Mg	mg/l	0.40	12.9	2.4	30
5	Na+K	mg/l	11.11	81.0	5.7	-
6	SO4	mg/l	9.62	64.3	10.3	500
7	Cl	mg/l	7.09	26.8	6.4	350
8	HCO3	mg/l	231.88	417.4	128.1	-
9	NH4	mg/l	0.00	0.07	0.02	1.5
10	NO2	mg/l	0.00	0.017	0.031	1
11	NO3	mg/l	5.16	2.05	0.8	50

No.	Water Test Parameters	Measurement Unit	Bayanchandmani TVET	Zuunkharaa TVET	Arkhangai TVET	National Standard on Water Quality MNS 0900:2018
			Measured Values			
12	Fe	mg/l	0.00	0.01	0.05	0.3

Based on the laboratory test results, tested values of all parameters are within the standard level, thus it can be concluded that there was no water pollution at the construction sites in the month of September.

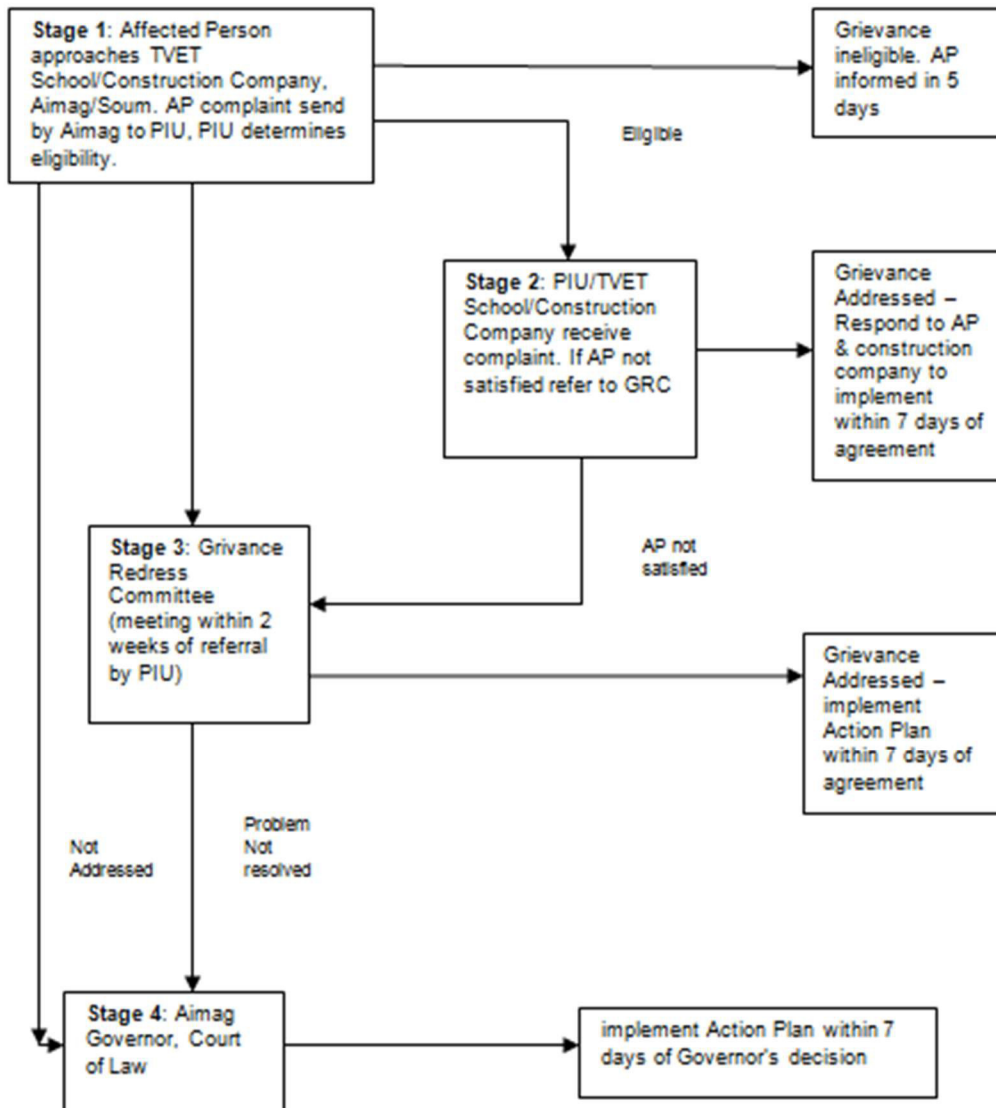
All water samples taken from the water supply sources at the TVET schools all comply to the National Standard on Drinking Water MNS 0900:2018, thus can be used for human drinking purposes.

6.3 GRIEVANCE REDRESS MECHANISM AND GRIEVANCE RECORDS

The grievance redress mechanism for the project was defined in the ADB IEE. Local communities, including TVET school management, teachers and students, respective local authorities, and residents, were presented with the grievance redress mechanism process during the public consultation meetings organized at each school during the IEE stage. Although the contractors have placed a banner and warning signs at the construction sites with contact address and compliance hotlines.

No environment-related complaints and grievances were received during the reported period.

FIGURE 2: GRIEVANCE REDRESS MECHANISM



7 OVERALL ENVIRONMENTAL PERFORMANCE

All mitigation measures specified in the EMP were implemented during the construction period. The civil works contractors complied with the requirements of EMP under supervision of the PIU. Below section provides description of how mitigation measures specified in the EMP were implemented for each aspect of eco-system component.

Physical resources. Air quality monitoring parameters, including dust level, were within allowed levels. All contractors signed Waste Disposal Agreements with the relevant local authorities and waste removal agencies. Approved landfill sites for removal of waste is indicated in the waste agreements. Excess soil was removed to the approved local landfill sites immediately during the earthworks period.

Environmental resources. Construction equipment in good technical condition and measured noise levels were within the allowed level. Construction companies used the existing sanitation, water supply, and waste disposal facilities in the school premises based on agreements with the TVET schools' management.

Ecological resources. Removal of poplar trees in Zuunkharaa TVET was avoided with a location change for winter greenhouse. 15 poplar trees removed in UB TVET will be replanted at other locations within the TVET school premises.

Human environment. No night-time construction activities. Construction sites and temporary used land will be restored once the construction is complete. No interruptions to the public utility lines occurred. All contractors prepared and implemented a contractor's environmental management plan (C-EMP) that include safety measures. Warning signs placed at the construction sites.

Compliance status of EMP measures and assessment of achievement are provided in the table below.

TABLE 19: EMP COMPLIANCE ASSESSMENT

Project Activity	Mitigation Measures	Compliance	Assessment on implementation
A. Physical Resources			
Construction site clearance	Sprinkle water at site during earthworks and dry days	Complied	Air quality monitoring parameters, including dust level, were within allowed levels.
Electrical/fire safety Equipment layout and installation	Electric fittings and fire safety devices located within secure casings	Complied	During the visual inspection, all electrical fittings and fire safety devices were located within secure casings at the TVET schools

Project Activity	Mitigation Measures	Compliance	Assessment on implementation
Asbestos is found during construction	Record of all TVET schools	Complied	No asbestos found during reported period
Generation of waste during construction	Obtain permission on waste removal	Complied	All contractors signed Waste Disposal Agreements with the relevant local authorities and waste removal agencies. Approved landfill sites for removal of waste is indicated in the waste agreements.
Surplus earthwork/soil	Excess soil from foundation excavation to be reused on site or disposed of in accordance with construction site management plan by contractor.	Complied	Excess soil was removed to the approved local landfill sites immediately during the earthworks period.
B. Environment Resources			
Equipment layout and installation	Selection of construction techniques and machinery to minimize ground disturbance such as noise	Complied	Construction equipment in good technical condition and measured noise levels were within the allowed level.
Provision of facilities for construction workers at work site	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities at work site.	Complied	Construction companies used the existing sanitation, water supply, and waste disposal facilities in the school premises based on agreements with the TVET schools' management.
Mechanized construction	Construction equipment to be well maintained. Construction techniques and Machinery selection to minimize ground disturbance.	Complied	Construction equipment in good technical condition and measured noise levels were within the allowed level.

Project Activity	Mitigation Measures	Compliance	Assessment on implementation
Oil spillage	Record of all oil spillage during construction from construction machinery etc. In case of oil spill, contaminated soil shall be neutralized	Complied	No oil spills recorded during the reported period
C. Ecological Resources			
Trimming/cutting of trees within TVET school boundary	Construction company will replant or transplant trees to be cut within the TVET school premises.	Complied	Removal of poplar trees in Zuunkharaa TVET was avoided with a location change for winter greenhouse. 15 poplar trees removed in UB TVET will be replanted at other locations within the TVET school premises.
D. Human Environment			
Construction schedules for TVET schools	Minimize construction activities undertaken during the night and local communities informed of the construction schedule.	Complied	No nighttime construction activities.
Temporary use of land	TVET school land will be reinstated following completion of construction.	Complied	Construction sites and temporary used land will be restored once the construction is complete.
Transportation and storage of materials	Transport loading and unloading of construction materials should not cause nuisance to the people by way of noise, vibration, and dust.	Complied	All contractors have designated warehouse for the construction materials at the construction site.
	Avoid storage of construction materials beside the road, around water bodies, residential or public sensitive locations.	Complied	
Interruptions to public utility lines	In case of temporary interruptions to the existing utility lines, notify the local administration and residents of the event in advance and minimize duration of the disturbance	Complied	No interruptions to the public utility lines occurred. Temporary interruptions to TVET school utility lines are notified to the school management.

Project Activity	Mitigation Measures	Compliance	Assessment on implementation
Health and safety	Contractor to prepare and implement a C-EMP which include safety measures and provide workers with required PPE.	Complied	All contractors prepared and implemented C-EMP that include safety measures
Community health and safety	Installation of proper warning signage, installation of sheet barriers to avoid people, students, stray animals falling into trenches, or projectile material hitting the students/residents walking by or damaging property	Complied	Warning signs placed at the construction sites
Capacity building	Training on EMP Implementation.	Complied	EMP implementation training organized for environmental health and safety staff of the contractors in April 2020

8 CONCLUSION

Mitigation measures specified in the EMP were implemented properly during the reported period. All contractors have prepared site-specific EMP (C-EMP) within the 30 days of contract signing that were reviewed and endorsed by the PIU. The contractors employed on-site environmental health and safety staff and signed waste disposal agreements with the respective local authorities.

The PIU has employed environmental safeguard specialist who has coordinated EMP implementation works performed by the contractor and its on-site environmental health and safety staff. Contractors' environmental health and safety staff were trained on EMP implementation and environmental compliance before commencement of construction. Local professional laboratories were hired to carry out field monitoring activities (sampling, measurements, and lab test).

Construction works completed at 5 TVET schools (Arkhangai, Nalaikh, Khuvsgul, Bayanchandmani, and UB Polytechnical College) and the contractors applied for handover to the State Commission. When the construction works are completed at the 5 TVET schools, the contractors performed post-construction site cleaning in order to ensure the construction sites are in a good condition before handover to the state commission.

Overall, the project has demonstrated a satisfactory level of environmental due diligence in the second half of year 2020. All 17 mitigation measures were implemented properly during the construction. EMP Compliance Assessment (Table 19 above) provides how each mitigation measured is implemented.

8.1 RECOMMENDATION FOR FURTHER ACTIVITIES

The next reporting period will cover the first half of year 2021 when the project's construction activities will be completed at two remaining TVET schools in Zuunkharaa and Darkhan-Urguu. Therefore, the next semiannual environmental monitoring report will need to include following points:

1. The contractors need to ensure that:
 - ✚ Construction sites need to be cleaned up properly
 - ✚ Domestic and construction waste are removed to approved landfill sites
 - ✚ Contractors' C-EMP implementation report is prepared and submitted to the PIU.
2. Monitoring of environmental parameters (air, soil and water quality, and noise level) are not required for the next reporting period because all outdoor physical activities are already completed with only indoor refurbishment works left. Nonetheless, the contractors shall continue implementation of health and safety measures as well as COVID-19 prevention plan during the indoor works.
3. An EMP implementation report, covering the whole duration of the project implementation period between January 2020 to June 2021, will be prepared by the PIU.