

Environmental Safeguards Due Diligence Report

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Mongolia: Support for Innovation and Collaboration
in Science and Technology Education in Secondary
Schools Project
(Financed by the Japan Fund for Prosperous and Resilient
Asia and the Pacific)

Prepared by the Ministry of Education and Science for the Asian Development Bank (ADB).

Currency equivalents

(as of January 30, 2025)

Currency unit	–	togrog (MNT)
MNT1.00	=	\$ 0.00029007
\$1.00	=	MNT 3,447.43

NOTE

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

Abbreviations

ACM	–	Asbestos-containing materials
ADB	–	Asian Development Bank
DEPP	–	Department of Education Policy Planning
EDDR	–	Environmental Due Diligence Report
ECOC	–	Environmental Code of Conduct
EA	–	Executing Agency
IA	–	Implementing Agency
MON	–	Mongolia
PISA	–	Programme for International Student Assessment
PIU	–	Project Implementation Unit
PPE	–	Personal Protective Equipment
SPS	–	Safeguard Policy Statement
TA	–	Technical Assistance
TUK	–	District's waste transportation company
USUG	–	Water and Sewerage Authority of Ulaanbaatar
VOC	–	Volatile organic compounds

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1. Project Brief Information

1. The proposed project aims to transform science and IT education by equipping students and teachers with the skills, tools, and mindsets required to thrive in an increasingly digital world and to respond to environmental challenges that constrain resilient and sustainable development. Through an innovative approach that emphasizes hands-on, project-based learning and the integration of artificial intelligence (AI) and sustainable development concepts, the project aims to foster future-ready learners and educators. Implemented in selected schools across Ulaanbaatar and rural areas of Mongolia, the project will directly benefit around 35,000 students, teachers, principals, and counselors—approximately 45% of whom are female. The student beneficiaries include both female and male students in both urban and rural areas, including students with disability, students from former and current herder families, and students living in ger areas. A large share of the students come from low-income families. Key interventions include strengthening teacher capacity, establishing physical and digital laboratories, introducing AI literacy training for education and AI tutoring tools for science education, promoting data-driven school management, and creating enabling environment for innovative learning. The project will help Mongolia build a resilient, future-ready generation of thought leaders and workforce by equipping students and teachers with the skills to meet the demands of a changing educational landscape, digital transformation, and broader socio-economic and environmental challenges
2. The project development objective will be achieved by output 1. Teachers' capacity for planning and delivering secondary school science and technology classes improved; output 2. Science and technology laboratory operationalized; and output 3. School-enabling environment for innovation and collaboration in science and technology education strengthened.
3. The primary participants in project activities will be science and IT teachers, as well as school principals, from at least 100 schools, including the six pilot schools selected for the establishment of physical and digital laboratories. All participating schools will benefit from a range of activities such as professional development trainings and workshops, leadership and instructional coaching, peer learning sessions, and knowledge-sharing events to strengthen science and IT education..
4. The proposed pilot schools include establishing physical laboratories in four schools in Ulaanbaatar: School No. 109, School No. 149, School No. 159, and School No. 42 and setting up digital laboratories in two schools: School No. 26 and School No. 53. In addition, training programs will be conducted for teachers from 100 selected schools to enhance their capacity in using and integrating these laboratories into the curriculum.

2. Project sites' assessment

5. This section evaluates each of the six proposed pilot school sites, with a focus on the potential environmental impacts associated with the project activities involved in setting up physical and digital laboratories. The assessment covers impacts on air, water, and soil resources, proximity to ecological and sensitive receptors, nearby communities, and school and public safety. The evaluation process included interviews and phone consultations with school representatives.

6. The environmental assessment consultant conducted assessments for the proposed project activities at the following sites between 8- 18 November 2024:

N o	Project site	Project activity	Address	Assessment date
1	School No.109	Science laboratories set up and delivery of science toolkits	3rd khoroo of Nalaikh district, Ulaanbaatar, Mongolia	November 8, 2024
2	School No.149	Science laboratories set up and delivery of science toolkits	20th khoroo of Chingeltei district, Ulaanbaatar, Mongolia	November 11, 2024
3	School No.157	Science laboratories set up and delivery of science toolkits	36h khoroo of Bayanzurkh district, Ulaanbaatar, Mongolia	November 14, 2024
4	School No.42	Science laboratories set up and delivery of science toolkits	2nd khoroo of Songinokhairkhan district, Ulaanbaatar, Mongolia	November 15, 2024
5	School No.26	Digital laboratories set up and delivery of equipment	13rd khoroo of Khan-Uul district, Ulaanbaatar, Mongolia	November 17, 2024
6	School No.53	Digital laboratories set up and delivery of equipment	16th khoroo of Bayanzurkh district, Ulaanbaatar, Mongolia	November 18, 2024

I. School No.109, Nalaikh District, Ulaanbaatar City

7. The assessment consultant conducted a site visit at 4:00 PM on November 8, 2024, and met with Mrs. Tserendolgor, Head of School No. 109, which is located in the 3rd khoroo of Nalaikh district, Ulaanbaatar. The Nalaikh district is a former coal mining town, located approximately 31 km from central Ulaanbaatar (Chinggis Square). The school was first established in 2006 as a primary school. In 2020, an extension was made to the school building to increase its capacity to accommodate an additional 320 students, allowing the school to expand its activities for secondary and high school education. Currently, the school serves a total of 970 students, including four students with disabilities.

8. The school building is a two-story structure with a basement, constructed from reinforced concrete. The school facilities occupy a 5,000 square meter area owned by the school administration. It is connected to the municipal electricity and telecommunications services. Water is supplied using 5-ton and 25-ton containers, while wastewater is collected and stored on-site in a 100-ton tank managed by a contractor company. The building is equipped with an individual gas heating system, with two separate stations: one for the main building and another for the extension building.

9. Please refer to Annex 1-1 for the images of School No. 109 and its surrounding areas.

Project activities

10. The project involves establishing physical and geographical as well as chemical and biological laboratories within the school extension building, along with the provision and installation of science toolkits. Two classrooms with storage rooms have been designated for this purpose and require only minimal renovations, such as wall painting, electrical work, and light installations, with no need for wall demolition or construction. The delivery of painting materials and science toolkits will be organized as part of the project.

Neighbors and access roads

11. The school building is situated along Nalaikh's main road, Uurkhaichid (Miners), which connects to Ulaanbaatar. To the east, there is a secondary road that links the main road to the nearby ger district. Adjacent to the school buildings, there are the 3rd khoroo office of Nalaikh district, which houses a family clinic and police office, and the Mongolian Revolutionary Party building located at 15 meters north. A grocery store named "Minii Shop" is located at the western side of the school and a ger residential area is located across the secondary road lying at approximately 40 meters from the school. An unused karaoke building is found 35 meters away across Uurkhaichid Road, while a 70-meter-long bridge lies 35 meters at the southern side of the school. To the left, there is a privately-owned warehouse enclosed by a block fence. The school has a 600-square-meter paved parking area with an additional entrance for large vehicles, separate from the main entrance. This provides ample access and space for unloading and preparing renovation materials and project equipment.

Sensitive receptors and Environmental disturbances

12. Nearby sensitive receptors, including a family health center, hospital, kindergarten, "Minii" shop, and residential ger area, require careful planning during the project implementation. The delivery and unpacking of painting materials and toolkits may cause increased noise, and engine fugitive gas emissions.

13. Since classes for 970 students are held at the school on weekdays from 8 AM to 7 PM, extra care must be taken during work hours to minimize noise level while transporting and delivering materials and equipment. The PIU/Contractors must consult with school management to schedule material deliveries outside school hours to avoid disruption. Alternative timings, such as evenings, weekends, or school holidays, should also be considered. A plan should be established to ensure low noise levels throughout the project.

14. Vehicle engine fugitive gas emissions during the transportation of renovation materials, science toolkits, and waste disposal will be generated, and it will negatively impact air quality. To mitigate this, the contractors must adhere to the national MNS standards, specifically MNS5013: 2009 for petrol engine vehicles and MNS5014: 2009 for diesel engine vehicles, which set the maximum acceptable levels and measurement methods for exhaust emissions, to minimize air quality impacts.

15. Since the school is located right next to the main road in Nalaikh district, and the access road and parking lots are paved, no dust will be generated during the delivery of renovation materials, science toolkits or waste disposal.

16. There are no ecologically sensitive areas such as protected areas nearby. The Tuul river is located 6 km from the project site, and no impact is expected due to the project activities.

Public safety

17. The sensitive receptors, including students, school staff, and visitors to the "Minii" shop, are at risk of road accidents due to increased traffic from project transportation vehicles. While there is separate entrance for vehicles to the school, reducing risks to the school community and shop visitors, careful consideration is still required. To mitigate these risks, the PIU/IA should ensure contractors follow traffic regulations, use designated roads, and schedule deliveries during low-traffic hours. Additionally, schools should display bulletin boards with project details and Grievance Redress Mechanism (GRM) contact information for handling complaints.

18. Wall painting and electrical work during school renovations pose health and safety risks. Wall painting can expose workers to VOCs and solvents, causing breathing issues, dizziness, and skin irritation. Electrical work can lead to electrical shocks, burns, and fires if safety measures are not followed. To reduce these risks, ensure proper ventilation, provide PPE for workers, use non-toxic paints, and schedule work outside school hours. Only qualified personnel should handle electrical tasks, with proper grounding and safety checks in place. Contractors must adhere to safety standards such as MNS 0640:1989 for fire safety, provide training for workers, and inspect tools to ensure their safe operation.

Waste management

19. During project activities, solid waste will be generated from unpacking materials (cardboard, plastic, wooden boxes), and wall painting (used brushes, rollers, paint cans). To manage this waste effectively, the PIU/contractors should coordinate with local authorities for proper disposal. Contractors must comply with Mongolia's Law on Waste (2017), sorting waste into recyclables, food waste, and non-recyclables, and disposing of each category in separate bins for collection by the Nalaikh district's waste transportation company (TUK). Contractors should also arrange for local recycling facilities to handle recyclables, and ensure non-recyclable waste is taken to approved disposal sites. On-site waste management practices must be implemented to maintain a clean worksite and minimize environmental impact.

II. School No.149, Chingeltei District, Ulaanbaatar City

20. The assessment consultant conducted a site visit at 8:00 AM on November 11, 2024, to gather data on the project site as well as relevant environmental and safeguard information. During the visit, the consultant met with Ms. Purevsuren, Head of School No. 149. This school is situated in the 20th khoroo of Chingeltei district, one of the six central districts of Ulaanbaatar. The school is located in a hilly area and surrounded by ger residential zones to the north, west, and south, with a mountain range in the east. A three-story school building with a reinforced

concrete structure was constructed in 2020 with a student capacity of 720 across two shifts, though it currently accommodates 830 students, including 11 students with disabilities.

21. The building is designed with energy-efficient materials and is built to withstand earthquakes up to a magnitude of 8. Occupying an area of 5,040 square meters, the school is connected to the city's electricity and telecommunication networks. For water, the school relies on a 25-ton water tank supplied by portable water transportation services from the Water and Sewerage Authority of Ulaanbaatar (USUG). The school also operates an independent wastewater treatment facility managed by "Ultrasonic" LLC. Heating is provided by an individual coal-fired heating station operated by "Anu" LLC, a contractor appointed by the Municipality of Ulaanbaatar (MUB) to oversee coal-fired heating facilities for schools and kindergartens across the city.

22. Please refer to Annex 1-2 for the images of School No. 149 and its surrounding areas.

Project activities

23. The project involves setting up physical and geographical as well as chemical and biological laboratories within the school building, along with providing and installing science toolkits. Two classrooms, one with an existing storage area and the other requiring a new wall for a storage room, will be renovated. This includes wall demolition and construction, painting, electrical work, and light installations. The transportation of painting materials and science toolkits will also be part of the project.

Neighbors and access roads

24. The school is located 7 km from Ulaanbaatar's main square (Chinggis Square), on the city's outskirts. It sits adjacent to state kindergarten No. 224 within the same fenced area, surrounded by a sparsely populated ger residential area. To the east of the school, a main paved road leads to the city center, crossing a 30-meter bridge over a ravine. In 2023, a new bus terminal and a concrete parking lot were built nearby, improving accessibility for students and staff. However, while the paved road ends at the school entrance, unpaved roads extend toward the ger areas. The school has a single entrance with a paved parking lot, which can be temporarily used for unloading renovation materials and project toolkits. Additionally, the parking lot at the end of the paved access road and the bus station can accommodate vehicles.

Sensitive receptors and Environmental disturbances

25. The school is surrounded by ger areas in the west and south, State Kindergarten No. 224 in the north and a mountain range (1537 meters above sea level) to the east. The sensitive receptors are the kindergarten and the nearby ger households situated just 10 meters away from the parking lot and bus station located north of the school building.

26. Since classes for 830 students are held at the school on weekdays from 8 AM to 7 PM, extra care must be taken during work hours to minimize noise level while transporting and delivering materials and equipment. The PIU/contractors must consult with school management to schedule material deliveries outside school hours to avoid disruption. Alternative timings, such as evenings,

weekends, or school holidays, should also be considered. A plan should be established to ensure low noise levels throughout the project.

27. Vehicle engine fugitive gas emissions during the transportation of renovation materials, science toolkits, and waste disposal will be generated and it will negatively impact air quality. To mitigate this, the contractors must adhere to the national MNS standards, specifically MNS5013: 2009 for petrol engine vehicles and MNS5014: 2009 for diesel engine vehicles, which set the maximum acceptable levels and measurement methods for exhaust emissions, to minimize air quality impacts.

28. As the access road and parking lots are paved, no dust will be generated during delivery of renovation materials, science toolkits and waste disposal.

29. There are no ecologically sensitive areas, such as protected zones, in the vicinity. As closest to school, the Selbe river is located 4.5 km in the east, and no impact is expected from the project activities.

Public safety

30. The sensitive receptors, including students, school staff, children, and visitors to state kindergarten No. 224, and people at the bus station and parking area, are at risk of road accidents due to increased traffic. Additionally, the steep vehicle entrance to the school, shared by pedestrians, raises safety concerns during deliveries. To mitigate these risks, the PIU/IA should assign safety personnel to monitor the area, prevent pedestrian crossings, and minimize risks as vehicles approach. Schools should display bulletin boards with project details and GRM contact information for handling complaints. Contractors must adhere to speed limits, use designated roads, and schedule deliveries during low-traffic hours or when students are not present.

31. Wall demolition at school increases risks to workers and school safety, including potential injury from falling debris, exposure to hazardous materials, and accidents due to improper use of equipment or unsafe work conditions. Workers of contractors must be trained in safe practice and proper equipment use during wall demolition. Protective barriers and signs should be placed around the work area in the school to avoid unpermitted entrance by the students and school staff. Workers should wear PPE, including helmets, gloves, and respirators. Demolition work should be scheduled outside school hours to ensure the safety of students and staff. If asbestos is found, work must stop immediately, and the chance find procedure must be implemented.

32. Wall painting during school renovations can expose workers to chemicals like VOCs and solvents, causing breathing problems, dizziness, headaches, and skin irritation. To reduce risks, ensure proper ventilation in classrooms, provide PPE for workers, use non-toxic paints, and schedule work outside school hours in consultation with school management.

33. Electrical work, including light installations and outlet work at school, can cause risks such as electrical shocks, burns and fires. These hazards can arise from improper wiring, faulty equipment, or inadequate safety measures. Only qualified personnel should handle electrical

work, ensuring properly ensuring safety. The area should be restricted, tools inspected for safety, and all workers trained on electrical hazards and safety regulations. Contractors must strictly adhere to safety standards such as MNS 0640:1989 for fire safety, provide proper training for their workers, and ensure the use of appropriate protective equipment during electrical work and light installations at the school.

Waste management

34. During project activities, solid waste will be generated from unpacking materials (cardboard, plastic, wooden boxes), and wall painting (used brushes, rollers, paint cans). To manage this waste effectively, the PIU/contractors should work with local authorities to ensure proper disposal. Contractors must adhere to Mongolia's Law on Waste (2017), sorting waste into recyclables, food waste, and non-recyclables, with each category placed in separate bins for collection by the Chingeltei district's waste transportation company (TUK). Additionally, contractors should arrange for local recycling facilities to process recyclables and ensure non-recyclable waste is transported to designated disposal sites. On-site waste management practices should be followed to maintain a clean worksite and minimize environmental impact.

35. During the school wall demolition to create an entrance for the new laboratory storage room, there is a risk of encountering asbestos-containing materials (ACMs) such as plaster, drywall, fireproofing sprays, and soundproofing panels. If disturbed, these materials can release harmful asbestos fibers. If ACMs are found, the area must be contained with barriers and plastic sheeting, workers should wear appropriate PPE, and asbestos should be removed and disposed of according to local regulations. If asbestos is discovered unexpectedly, work must stop, and qualified professionals should manage the material and secure the site

III. School No.159, Sukhbaatar District, Ulaanbaatar City

36. The assessment consultant conducted a site visit at 12:00 PM on November 14, 2024, to gather data on the project site as well as relevant environmental and safeguard information. During the visit, the consultant met with Ms. Tuvshinjargal, Head of School No. 159. This school is situated in the 13th khoroo of Sukhbaatar district, Ulaanbaatar. The school is located 4 km from the city center among the ger residential area. The school building is a three-story, reinforced concrete structure which was constructed in 2023 with a student capacity of 960 across two shifts, though it currently accommodates 910 students including 6 disabled children.

37. Occupying an area of 5000 square meters, the school is connected to the municipal electricity and telecommunication networks. Heating supply is provided by the Selbe heating station which is 430 m from the school in the north. Wastewater collection networks are connected but the collector is not working so it is not currently in use. Thus, the wastewater is collected in tanks and disposed of by the contractor. The school hours are from 8 AM to 6 PM from Monday to Friday.

38. Please refer to Annex 1-3 for the images of School No. 159 and its surrounding areas.

Project activities

39. The project involves setting up physical and geographical as well as chemical and biological laboratories within the school building. Two classrooms have been designated for this purpose, one with a storage room and the other without. Thus, renovations will include constructing a wall to make a storage room in the school corridor, demolishing a wall to create a door for a new storage room, painting, electrical work, and installing lights. The transportation of painting materials and science toolkits will also be organized as part of the project.

Neighbors and access roads

40. The school is adjacent (10 meters) to the new building of Sukhbaatar district hospital with a capacity of 250 beds on its east side, and the state kindergarten No.248 with a capacity of 150 children at 40 meters in the south side. Ger residential areas and two small shops are 10 meters to the west and north sides of the school. The extension construction work of kindergarten No 248 is ongoing currently, so the main paved road to the school is busy. The school has paved secondary road access from the main road which is 500 meters in the west. The road to the school is narrow and has limited space for pedestrians. It has a one-line in front of kindergarten No.248 in the corner of one household yard which could be dangerous to make a turn by any vehicles. Therefore, this road is not recommended for use to access the school. Instead of this paved road, there is a 340 meters unpaved road in the north of the school building which can be safer than the main paved road. The school parking lot outside the fence is unpaved, but there is a concrete parking lot in the school yard that can be used for unloading the renovation materials and science toolkits.

Sensitive receptors and Environmental disturbances

41. The school is in a ger residential area, surrounded by a hospital, kindergarten, and small shops. Sensitive receptors, such as students, school staff, hospital patients and visitors, kindergarten children and parents, and shop visitors, are vulnerable to increased noise levels, vehicle gas emissions, and dust.

42. As classes for 970 students are held at the school on weekdays from 8 AM to 7 PM, extra care must be taken during school hours to minimize noise level while transporting and delivering materials and equipment. Additionally, wall demolition at the school to build the entrance to the storage room will increase the noise level in the school corridor. Thus, PIU/contractors must consult with hospital management to schedule deliveries to avoid increased noise level that may disturb the students, school staff, neighboring patients and residents. A plan should be established to ensure low noise levels throughout the project.

43. Fugitive gas emissions from vehicle engines during the delivery of renovation materials, laboratory equipment, and waste disposal will harm air quality. To minimize this impact, contractors must follow national MNS standards—MNS5013: 2009 for petrol engines and MNS5014: 2009 for diesel engines—which set limits and methods for measuring exhaust emissions. Contractors must also maintain records of regular engine maintenance to meet these requirements, keep vehicles in good technical condition, and ensure vehicles are turned off when not in use.

44. The access road to the school from the main paved road, as well as the road north of the school which could be used by project vehicles, are unpaved. This increases the likelihood of excessive dust generation, which can be managed through dust suppression by sprinkling water. Additionally, wall demolition at the school to create an entrance for the storage room will generate significant dust in the school corridor. To prevent health risks from dust spreading to surrounding areas, the area should be wetted, and classrooms should be well-ventilated during the demolition. These measures will help protect the health of workers, students, and school staff.

45. The access roads to the school, including the one from the main paved road and the northern road for project vehicles, are unpaved, so water sprinkling will be used for dust suppression. Additionally, wall demolition to create an entrance to the storage room will generate excessive dust. To manage this, dust control measures such as ventilating classrooms, and wetting the area will be implemented to protect the health of workers, students, and staff.

46. There are no ecologically sensitive areas, such as protected zones, in the vicinity. The Selbe river is located 570 meters from the project site in the east, and no impact is expected from the project activities.

Public safety

47. Sensitive receptors including students, school staff, patients and visitors to the hospital, children and parents of the kindergarten, and shop visitors are at risk of road accidents due to increased traffic volume and road conditions near the project site. As the school shares the same paved road with Sukhbaatar district hospital, the project contractor must consult with hospital management and schedule deliveries carefully to ensure the safety of visitors and patients. To mitigate these risks, the PIU/IA should ensure contractors follow traffic regulations, use designated roads, and schedule deliveries during low-traffic hours. Additionally, schools should display bulletin boards with project details and Grievance Redress Mechanism (GRM) contact information for handling complaints.

48. Wall demolition at school increases risks to workers and school safety, including potential injury from falling debris, exposure to hazardous materials, and accidents due to improper use of equipment or unsafe work conditions. Workers of contractors must be trained in safe practice and proper equipment use during wall demolition. Protective barriers and signs should be placed around the work area in the school to avoid unpermitted entrance by the students and school staff. Workers should wear PPE, including helmets, gloves, and respirators. Demolition work should be scheduled outside school hours to ensure the safety of students and staff. If asbestos is found, work must stop immediately, and the chance find procedure must be implemented.

49. Wall painting during school renovations can expose workers to chemicals like VOCs and solvents, causing breathing problems, dizziness, headaches, and skin irritation. To reduce risks, ensure proper ventilation in classrooms, provide PPE for workers, use non-toxic paints, and schedule work outside school hours in consultation with school management.

50. Electrical work, including light installations and outlet work at school, can cause risks such as electrical shocks, burns and fires. These hazards can arise from improper wiring, faulty equipment, or inadequate safety measures. Only qualified personnel should handle electrical work, ensuring properly ensuring safety. The area should be restricted, tools inspected for safety, and all workers trained on electrical hazards and safety regulations. Contractors must strictly adhere to safety standards such as MNS 0640:1989 for fire safety, provide proper training for their workers, and ensure the use of appropriate protective equipment during electrical work and light installations at the school.

Waste management

51. During project activities, solid waste will be generated from unpacking materials (cardboard, plastic, wooden boxes) and wall painting (used brushes, rollers, paint cans). To manage this waste effectively, the PIU/contractors should work with local authorities to ensure proper disposal. Contractors must adhere to Mongolia's Law on Waste (2017), sorting waste into recyclables, food waste, and non-recyclables, with each category placed in separate bins for collection by the Chingeltei district's waste transportation company (TUK). Additionally, contractors should arrange for local recycling facilities to process recyclables and ensure non-recyclable waste is transported to designated disposal sites. On-site waste management practices should be followed to maintain a clean worksite and minimize environmental impact.

52. During the school wall demolition to create an entrance for the new laboratory storage room, there is a risk of encountering asbestos-containing materials (ACMs) such as plaster, drywall, fireproofing sprays, and soundproofing panels. If disturbed, these materials can release harmful asbestos fibers. If ACMs are found, the area must be contained with barriers and plastic sheeting, workers should wear appropriate PPE, and asbestos should be removed and disposed of according to local regulations. If asbestos is discovered unexpectedly, work must stop, and qualified professionals should manage the material and secure the site

IV. School No.42, Songinokhairkhan District, Ulaanbaatar city

53. The assessment consultant conducted a site visit at 9:00 AM on November 15, 2024, to gather data on the project site as well as relevant environmental and safeguard information. During the visit, the consultant met with Mr.Davaadoo, Head of School No. 42. This school is situated in the 2nd khoroo of Songinokhairkhan district, Ulaanbaatar. The two-story main secondary school building was constructed in 1969, and the adjoining elementary school building was built in 1972. The school has a total student capacity of 1,640 students across two shifts, though it currently accommodates 2,615 students. The three-story extension building of the school with a capacity of 640 students is under construction in the south-east of the school yard. The construction works of the new school building are funded by the Asian Development Bank (ADB) through Ger Area Development Investment Program (GADIP) and are planned to be completed by Q3, 2025.

54. The building is designed to be energy-efficient and is built to withstand earthquakes up to a magnitude of 7. The new school will be connected to the municipal central water, electricity, and telecommunication, wastewater and heating. However, the heating will be provided by individual

coal-fired heating station operated by “Anu Service” LLC until the heating pipeline connection is completed.

55. Please refer to Annex 1-4 for the images of School No. 42 and its surrounding areas

Project activities

56. The project involves establishing physical and geographical as well as chemical and biological laboratories within the new school building. These laboratories, along with storage rooms, will be developed as part of the ongoing construction of the new school facility. Renovation works, including painting and electrical installations, will be conducted during the construction phase. Deliveries and installations of science toolkits will occur during the laboratory setup stage.

Neighbors and access roads

57. The school is surrounded by a ger residential area, with a bus stop located 100 meters west of the entrance. There is a coal-fired heating facility operated by 'Anu Service' LLC in the south of the school, which manages heating for schools and kindergartens in Ulaanbaatar city with the permission of MUB. A main paved road runs along the south and west sides of the school, which will be used for transportation during the construction of the new school building, including laboratory rooms. The school is connected to this road via a 50-meter unpaved access road, with an unpaved parking area in front of the school fence. A pedestrian bridge crosses the large ravine to the east of the school, adjacent to the new building. The new school building will share a paved parking area located within the current school yard.

Sensitive receptors and Environmental disturbances

58. The school is situated near residential areas, nearby ger households, and a heating facility could be impacted by project activities. A ravine to the east separates the school from the ger residential area. Sensitive receptors, such as students, staff, local pedestrians and households may be exposed to disturbances from increased noise, dust, and reduced air quality during the construction of the new school building including the establishment of laboratory facilities. These impacts caused by the project activities will be mitigated by the contractors as part of the GADIP project implementation and ensured ADB Safeguards Policy Statement (2009).

59. Ambient noise level may be increased due to the transportation of science toolkits and could disrupt students, staff, and visitors to the school. The PIU/contractors must consult with school management to determine the optimal timing for transporting materials and minimize disruption due to increased noise level. Deliveries should occur outside school hours, from 8 AM to 7 PM, Monday to Friday, to avoid interfering with educational activities. A plan should be established to ensure low noise levels throughout the project.

60. Vehicle engine fugitive gas emissions during the transportation of science toolkits will be generated and it will negatively impact ambient air quality. To minimize this impact, contractors must follow national MNS standards such as MNS5013: 2009 for petrol engines and MNS5014: 2009 for diesel engines which set limits and methods for measuring exhaust emissions.

Contractors must also maintain records of regular engine maintenance to meet these requirements, keep vehicles in good technical condition, and ensure vehicles are turned off when not in use.

61. The access road to the school from the main paved road is currently unpaved, leading to potential dust generation. To address this, suppression with sprinkling water should be carried to minimize excessive dust.

62. There are no ecologically sensitive areas, such as protected zones, in the vicinity. The Tuul river is located 4.8 km meters from the project site in the east, and no impact is expected from the project activities.

Public safety

63. Sensitive groups, such as students, school staff, and pedestrians, are at risk of road accidents due to increased traffic near the project site during the transportation of equipment. Pedestrians at bus stops and those using the school entrance, which is close to the vehicle entrance, are particularly vulnerable. To ensure safety, the project contractor must consult with school management and carefully plan delivery schedules. The PIU/IA should ensure contractors follow traffic regulations, use designated roads, and schedule deliveries during low-traffic hours. Schools should also post bulletin boards with project details and GMR contact information to address complaints.

Waste management

64. During project activities, solid waste will be generated from unpacking materials (cardboard, plastic, wooden boxes) and wall painting (used brushes, rollers, paint cans). To manage this waste effectively, the PIU/contractors should work with local authorities to ensure proper disposal. Contractors must adhere to Mongolia's Law on Waste (2017), sorting waste into recyclables, food waste, and non-recyclables, with each category placed in separate bins for collection by the Songinokhairkhan district's waste transportation company (TUK). Additionally, contractors should arrange for local recycling facilities to process recyclables and ensure non-recyclable waste is transported to designated disposal sites. On-site waste management practices should be followed, as the school implements the waste management project under SWITCH ASIA program and ensures the waste segregation within and outside the school building.

V. School No.26, Khan-Uul District, Ulaanbaatar City

65. The assessment consultant conducted a site visit at 11:00 AM on November 17, 2024, to gather data on the project site as well as relevant environmental and safeguard information. During the visit, the consultant met with Ms. Odontuul, Manager of School No. 26. This school is 35 km from the Ulaanbaatar city in the 13th khoroo of Khan-Uul district, Ulaanbaatar where there is a poultry farm village. The school building was built in 1964 with a capacity of 320 students,

though it currently accommodates 710 students. The building is connected to municipal central water, electricity, telecommunication and heating supply and wastewater collection networks.

66. Please refer to Annex 1-5 for the images of School No. 26 and its surrounding areas.

Project activities

67. The project involves setting up a digital laboratory and providing the necessary equipment for the school. This may include minor renovations, such as painting and other necessary minor improvements. Additionally, computers and flat screens will be supplied to enhance the school's digital learning environment.

Neighbors and access roads

68. The school is located in a less dense area, with a chicken farm and factories nearby, and is surrounded by ger households and few residential apartments, the nearest of which is ger household 5 meters to the east. There is a khoroo administration building south of the school fence in front of the school. There is a Tumen Shuvuut chicken factory 60 m in the south, and there is a branch of Tuul river at 100 meters in the north across the main auto road which connects Ulaanbaatar to Altanbulag. The access road from this main road to the school is an unpaved 100 meters road that reaches the back gate of the school. The school has two gates including the main gate and the back gate. Main entrance has an earth parking lot, while the back gate has direct access to the school paved road to the parking lot which is only used for the temporary parking by the transportation of goods to the school. Thus, the back gate can be used for equipment delivery.

Sensitive receptors and Environmental disturbances

69. The closest neighboring ger households to the west and east of the school are identified as sensitive receptors in addition to the school students and staff may be exposed to disturbances from increased noise, dust, reduced air quality and dust during the delivery of laboratory equipment to the school.

70. Ambient noise level may be increased due to the transportation of science toolkits and could disrupt students, staff, and visitors to the school. The PIU/contractors must consult with school management to determine the optimal timing for transporting materials and minimize disruption due to increased noise level. Deliveries should occur outside school hours, from 8 AM to 7 PM, Monday to Friday, to avoid interfering with educational activities. A plan should be established to ensure low noise levels throughout the project.

71. Vehicle engine fugitive gas emissions during the transportation of science toolkits will be generated and it will negatively impact air quality. To minimize this impact, contractors must follow national MNS standards such as MNS5013: 2009 for petrol engines and MNS5014: 2009 for diesel engines which set limits and methods for measuring exhaust emissions. Contractors must also maintain records of regular engine maintenance to meet these requirements, keep vehicles in good technical condition, and ensure vehicles are turned off when not in use.

72. The access road connecting the school to the main paved road is currently unpaved, which may result in dust generation. To mitigate this, dust suppression through sprinkling water should be implemented to minimize excessive dust.

73. There is a branch of Tuul river at the distance of 100 meters to the north and no impacts are foreseen by the project activities. However, the transportation vehicle needs to ensure road safety and avoid traffic accidents.

Public safety

74. The school's location further from Ulaanbaatar city center increases the risk of traffic accidents during the delivery of science toolkits. Additionally, a busy main road to the north of the school will be used by transport vehicles during project activities, requiring road safety measures. To ensure safety, the project contractor must consult with school management and plan delivery schedules carefully. The PIU should ensure contractors follow traffic regulations, use designated roads, and schedule deliveries during low-traffic hours. Schools should also display bulletin boards with project details and GRM contact information to handle complaints.

Waste management

75. During project activities, solid waste will be generated from unpacking materials (cardboard, plastic, wooden boxes). To manage this waste effectively, the PIU/contractors should work with local authorities to ensure proper disposal. Contractors must adhere to Mongolia's Law on Waste (2017), sorting waste into recyclables, food waste, and non-recyclables, with each category placed in separate bins for collection by the Khan-Uul district's waste transportation company (TUK). Additionally, contractors should arrange for local recycling facilities to process recyclables and ensure non-recyclable waste is transported to designated disposal sites.

VI. School No.53, Bayanzurkh District, Ulaanbaatar City

76. The interview was conducted by the assessment consultant with Mr. Amarsanaa, Head of School No. 53 at 10:00 AM on November 18, 2024, to gather data on the project site as well as relevant environmental and safeguard information. This school is situated in the 16th khoroo of Bayanzurkh district, one of the six central districts of Ulaanbaatar. The school was established in 1973 and has a total of 4956 students.

77. Please refer to Annex 1-6 for the images of School No. 53 and its surrounding areas.

Project activities

78. The project involves setting up a digital laboratory and providing the necessary equipment for the school. This may include minor renovations, such as painting and other necessary minor improvements. Additionally, computers and flat screens will be supplied to enhance the school's digital learning environment.

Neighbors and access roads

79. The school is in the middle of a residential area composed of apartments. There is an immediate unpaved road access to the school at 80 meters from the Ulaankhuaran auto road. The school has two paved parking lots in the north and south, both of which can be used for the delivery of project toolkits.

Sensitive receptors and Environmental disturbances

80. The school is located in front of secondary school No. 44 within several residential apartments. Therefore, sensitive receptors near the site are the neighboring school and residential apartments.

81. Ambient noise level may be increased due to the transportation of science toolkits and could disrupt students, staff, and visitors to the school. The PIU/contractors must consult with school management to determine the optimal timing for transporting materials and minimize disruption due to increased noise level. Deliveries should occur outside school hours, from 8 AM to 7 PM, Monday to Friday, to avoid interfering with educational activities. A plan should be established to ensure low noise levels throughout the project.

82. Vehicle engine fugitive gas emissions during the transportation of science toolkits will be generated and it will negatively impact air quality. To minimize this impact, contractors must follow national MNS standards such as MNS5013: 2009 for petrol engines and MNS5014: 2009 for diesel engines which set limits and methods for measuring exhaust emissions. Contractors must also maintain records of regular engine maintenance to meet these requirements, keep vehicles in good technical condition, and ensure vehicles are turned off when not in use.

83. The access road connecting the school to the main paved road is currently unpaved, which may result in dust generation and may impact temporarily the nearby residents and visitors. To mitigate this, dust suppression through sprinkling water should be implemented to minimize excessive dust.

84. There are no ecologically sensitive areas, such as protected zones, in the vicinity. The Uliastai river is located 3.2 km from the project site, and no impacts are anticipated from project activities.

Public safety

85. As the school is in the middle of an residential area with movement of vehicles and pedestrians, delivery of project items could increase the road safety during the project implementation. To ensure safety, the project contractor must consult with school management and plan delivery schedules carefully. The PIU/IA should ensure contractors follow traffic regulations, use designated roads, and schedule deliveries during low-traffic hours. Schools should also display bulletin boards with project details and GRM contact information to handle complaints.

Waste management

86. During project activities, solid waste will be generated from unpacking materials (cardboard, plastic, wooden boxes). To manage this waste effectively, the PIU/contractors should work with local authorities to ensure proper disposal. Contractors must adhere to Mongolia's Law on Waste

(2017), sorting waste into recyclables, food waste, and non-recyclables, with each category placed in separate bins for collection by the soum's waste transportation company. Additionally, contractors should arrange for local recycling facilities to process recyclables and ensure non-recyclable waste is transported to designated disposal sites.

87. The following site-specific potential impacts and possible mitigation measures will be implemented at project sites during the project implementation.

3. Summary of site-specific potential impacts and possible mitigation measures in project sites

No	Potential impacts	Impact source of project activity	Project sites of concerns	Assessment observations	Mitigation measures
1	Increased noise level	Delivery of science and digital laboratory items and equipment, purchase of goods	All schools	All project sites are located near to sensitive receptors to the noisy works. Specifically, School No. 109 is located next to a shop, School No. 149 is directly next to Kindergarten No. 224, and School No. 159 is adjacent to the Sukhbaatar district hospital making them particularly vulnerable to noise impacts. Project activities, such as the transportation of renovation materials, laboratory equipment and waste disposal are expected to increase ambient noise levels. This could disrupt the nearby sensitive receptors such as students, employees, visitors and residents.	The PIU/contractors must consult with school management to determine the optimal timing for transporting project items and minimize disruption due to increased noise level. Deliveries should occur outside school hours, from 8 AM to 7 PM, Monday to Friday, to avoid interfering with educational activities. Additionally, the contractor should coordinate with school management and other affected entities to schedule activities and deliveries, considering alternative timings such as evenings, weekends, or school holidays (spring or summer) to further reduce disruption. A plan should be established to ensure low noise levels throughout the project.
		Wall demolition	School No.159	Wall demolition at the school to build the entrance to the storage room will increase the noise level in the school corridor	Thus, PIU/ contractors must consult with hospital management to schedule deliveries to avoid increased noise level that may disturb the students, school staff, neighboring patients and residents. A plan should be established to ensure low noise levels throughout the project.

2	Reduced ambient air quality	Delivery of science and digital laboratory items and equipment	All schools	Transportation vehicle engine fugitive gas emissions during the delivery of project equipment, and materials can reduce ambient air quality.	<p>Contractors must ensure they have records of regular maintenance of engines to meet the emission requirements and maintain vehicles in good technical condition. Vehicles shall be turned off when not in use.</p> <p>For transportation vehicles, the following two standards requirements for emission should be applied to reduce the impact on air quality:</p> <p>MNS5013: 2009 Petrol engine vehicles – Maximum acceptable level and measuring methods of exhaust emission, and MNS5014: 2009 Diesel engine vehicles – Maximum acceptable level and measuring methods of exhaust emission.</p> <p>Implement ADB's Sustainable Public Procurement Guidance Note and national environmental regulations.</p>
				To minimize emissions, it is recommended to procure eco-labeled and energy-efficient equipment. Additionally, sourcing goods locally can further reduce the environmental impact by minimizing transportation-related emissions.	
3	Dust generation	Delivery of transportation	<p>School No. 159</p> <p>School No.42</p> <p>School No. 23</p> <p>School No. 53</p> <p>School No. 12</p>	Access roads to these schools are unpaved and transportation vehicles may lead to increased dust, which negatively impacts on the health of contractor's workers, students, school workers and nearby residents living in ger and apartment buildings.	Contractors should control vehicle speeds on unpaved access roads and sprinkle water to suppress dust generated during the transportation.

		Wall demolition	School No.149 School No.159	Wall demolition at the school to build the entrance to the storage room will cause excessive dust generation in the school corridor and can spread to surrounding areas and pose health risks.	To prevent health risks from spreading to surrounding areas, the area should be wetted, and classrooms should be well-ventilated during the demolition. These measures will help protect the health of workers, students, and school staff.
4	Public safety	Delivery of science and digital laboratory items and equipment, purchase of goods	All schools	<u>Road accident:</u> Increased higher traffic volumes and vehicle movements may lead to accidents around the schools as all the schools require the transportation to be carried out at a distance from 4 km to 35 km within the Ulaanbaatar city.. In addition, delivery transportation increases risks near school entrances during renovation materials, and laboratory equipment transport.	The PIU/IA should outline clear safety requirements to ensure compliance with traffic regulations and prevent accidents. Contractors must adhere to speed limits, use designated roads, and schedule deliveries during low-traffic hours or when students are not present. Drivers should be well-trained and follow safe driving practices. The PIU/IA should assign safety personnel to monitor the area, preventing pedestrian crossings and minimizing risks as vehicles approach the site. Schools should display bulletin boards with project details and GRM contact information for handling complaints.
		Wall demolishing	School No.149 School No.159	<u>Increased risk to workers and school safety:</u> The demolition of the school wall increases risks to both workers and school safety, as it may involve exposure to hazardous materials such as asbestos-containing materials (ACMs), dust, and debris, along with potential construction-related hazards like falling objects or structural instability.	Workers of contractors must be trained in safe practice and proper equipment use during wall demolition. Protective barriers and signs should be placed around the work area in the school to avoid unpermitted entrance by the students and school staff. Workers should wear PPE, including helmets, gloves, and respirators. Demolition work should be scheduled outside school hours to ensure the safety of students and staff.
		Wall construction	School No.149 School No.159	Wall construction activities expose workers and the school community to safety hazards such as falling debris, dust generation, and unauthorized entrance by students and staff.	Workers must wear appropriate PPE, including helmets, gloves, eye protection, and respirators. The work area should be secured with barriers to prevent unauthorized access.

		Wall painting	All schools	<u>Chemical exposure:</u> Wall painting during school renovations can expose workers to chemicals like VOCs and solvents, which may lead to breathing problems, dizziness, headaches, and skin irritation.	Ensure proper ventilation in the classrooms during wall painting. Contractors must provide PPE for workers, use non-toxic paints, and schedule work outside school hours in consultation with school management.
		Electrical works		<u>Electrical hazards:</u> The electrical work, including light installations and outlet work at these schools, can cause risks such as electrical shocks, burns and fires. These hazards can arise from improper wiring, faulty equipment, or inadequate safety measures.	Contractors must strictly adhere to safety standards such as MNS 0640:1989 for fire safety, provide proper training for their workers, and ensure the use of appropriate protective equipment during electrical work and light installations in the laboratory rooms.
5	Generation of solid waste	Unpacking of science and digital laboratory items and equipment	All schools	<p>During project activities, solid waste will be generated from various sources:</p> <ul style="list-style-type: none"> • <u>Unpacking materials:</u> Cardboard, plastic wrapping, wooden boxes, ropes, and other packaging materials from project deliveries. • <u>Wall demolition and construction:</u> Bricks, wood, concrete, plaster, insulation materials, and metal fixtures such as nails and screws. • <u>Wall painting:</u> Used brushes, rollers, paint cans, and protective coverings like plastic sheets or masking tape. <p>If waste management is not properly coordinated with local authorities, waste could accumulate in streets, disrupting the community and harming the environment. Proper planning and coordination are essential to ensure safe and sustainable waste disposal.</p>	<p>To manage solid waste generated during project activities effectively, the PIU/contractors should coordinate with local authorities responsible for landscaping and public utilities to ensure proper waste disposal. Contractors must comply with Mongolia's Law on Waste (2017), which requires sorting waste into three categories: recyclables, food waste, and non-recyclables. Each category must be disposed of in separate bins for collection by the district's waste transportation company (TUK).</p> <p>Contractors should provide designated bins for waste sorting at the project site and establish partnerships with local recycling facilities to collect and process recyclable materials. Non-recyclable waste must be taken to approved disposal sites.</p> <p>Additionally, contractors should implement on-site waste management practices, maintain a clean worksite, and organize regular waste collection with local waste management services to ensure proper disposal and minimize environmental impact.</p>
		Renovation including wall demolition, construction and painting Electrical work	School No.109 School No.149 School No.159 School No.42		

		Wall demolition	School No.159 School No.149	During the wall demolition at the school to create an entrance to the storage room for the new laboratory, there is a chance of encountering potential asbestos-containing materials (ACMs). These could include plaster or drywall, fireproofing sprays, and soundproofing panels etc., If disturbed, these materials may release harmful asbestos fibers, posing serious health risks.	During school wall demolition, if ACMs are found, the area must be contained with barriers and plastic sheeting, and workers should wear appropriate PPE, including respirators. Asbestos materials should be carefully removed and disposed of according to local regulations. The work should stop immediately, and qualified professionals must assess and manage the material, ensuring the site is secured until proper procedures are followed.
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4. Conclusion

97. The site assessment for the Support for Innovation and Collaboration in Science and Technology Education in Secondary Schools Project confirms that the activities have minimal environmental impact and can be managed by implementation of the mitigation measures identified in the Environmental Code of Conduct (ECoC) in compliance with ADB Safeguard Policy Statement (SPS, 2009), and Mongolian national regulations and environmental standards.

Key findings:

- **No ecological impact:** No sensitive ecological areas are near the project schools, and urban infrastructure ensures no disruption to natural habitats.
- **Environmental risks and mitigation:**
 - **Noise:** Work will be scheduled during weekends, off-peak hours, or school breaks.
 - **Dust:** Vehicle speeds will be controlled, water sprinkling will suppress dust and wet the area during demolition.
 - **Air quality:** Vehicles will be maintained to meet emission standards (MNS5013: 2009 for petrol, MNS5014: 2009 for diesel), and turned off when not in use.
 - **Waste management:** Waste will be managed according to Mongolia's Law on Waste (2017). In case ACMs are found, the area will be sealed, and materials will be safely removed by professionals.
- **Safety risks and mitigation:**
 - **Traffic and safety:** Deliveries will occur during low traffic hours, and safety personnel will monitor the area.
 - **Chemical exposure:** Non-toxic paints will be used, and work will be scheduled outside school hours with proper ventilation and PPE will be provided for workers.
 - **Electrical hazards:** Safety standards such as MNS 0640:1989 for fire safety, will be followed, and workers will be properly trained and equipped during electrical works.
- **Stakeholder Engagement:** Collaboration with schools, and other affected entities such as kindergartens, clinics, khoroo offices and shops etc., will be conducted to ensure smooth project implementation and minimize impacts to be caused by the project activities.
- **Grievance Redress Mechanism (GRM):** A functional GRM will be in place to address concerns and ensure transparency. Schools should post bulletin boards with project details and GRM contact information for complaints. In case of receiving complaints through GRM or any accidents happened, PIU/DEPP /MOE needs to report those to ADB immediately.

Overall Conclusion:

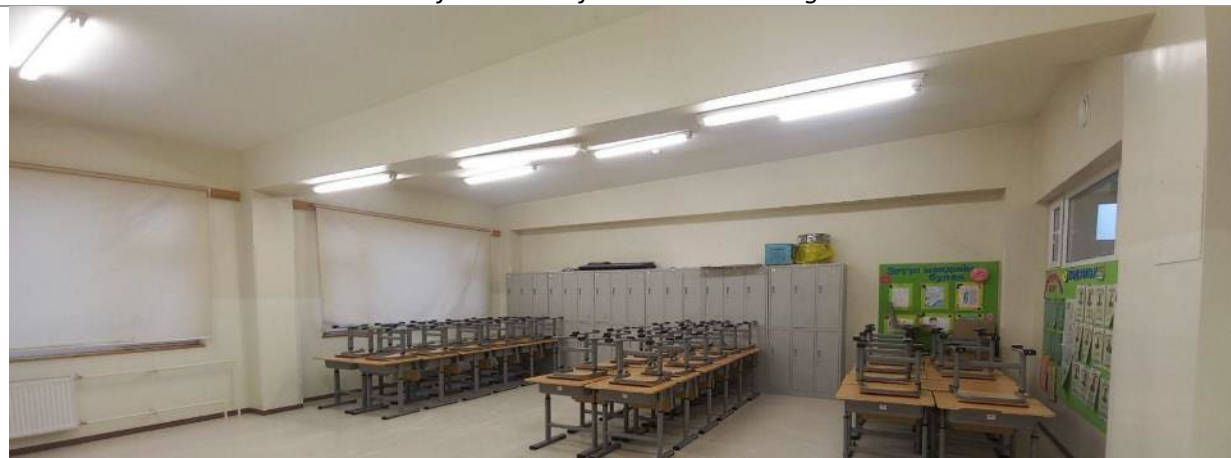
98. Classified as a Category C project under the ADB Safeguard Policy Statement (2009), the environmental and safety impacts are expected to be minimal and site-specific, with no significant adverse effects anticipated. The mitigation measures and GRM will ensure that the impacts are prevented and mitigated by ensuring minimal disruption and maintaining safety during project implementation.

Annex 1. Images of schools and surrounding areas

1.Images of **School No. 109** and its surrounding areas



A front view of the school building



The classrooms designed for building laboratories along with an adjoining storage rooms



A road Uurkhaichid/Miners is located to the east of the school



A bridge located over the ravine to the east of the school



Waste collection and storage area

2. Images of **School No.149** and its surrounding areas



A front view of the school building



A front view of the school building



A view of bridge in the north of the school building



The classrooms along with an adjoining storage rooms designated for setting up laboratories



Waste collection and storage

3. Images of **School No.159** and its surrounding areas



A front view of the school building



The classrooms along with an adjoining storage rooms designated for setting up laboratories



Parking lot within the school fence



School entrance for transportation vehicle and unpaved access road



Auxiliary road to the school from the main auto road

4. Images of **School No.42** and its surrounding areas

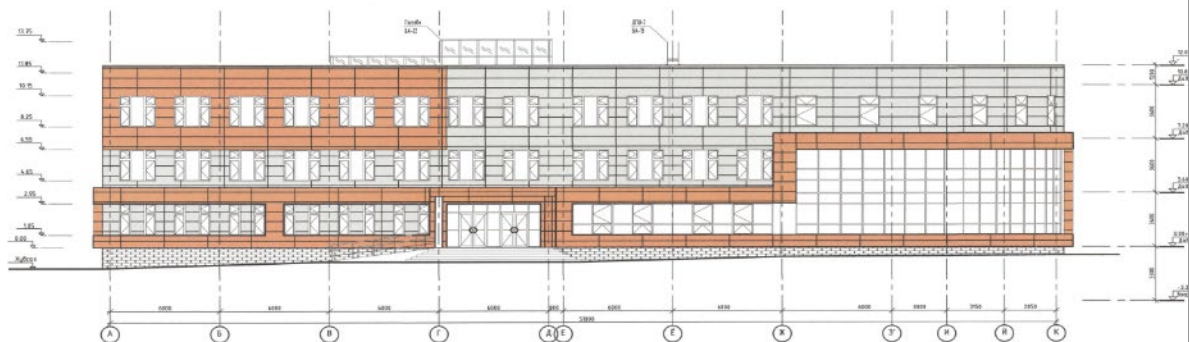


A front view of the school building



Parking lot within the school fence

HYYP TA/A A-K M1:150



Architectural drawing of the new school building



Main auto road to the school



Unpaved access road to the school entrance



School entrance for transportation vehicle



Surrounding area and bridge in the north-east of the school



Waste collection and storage

5. Images of **School No.26** and its surrounding areas



A front view of the school building



Unpaved access road to the back entrance of the school



Back entrance of the school for transportation vehicle



Parking lot within the school fence



The classrooms along with an adjoining storage rooms designated for setting up laboratories



Waste collection and storage



Waste collection and storage

6. Images of **School No.53** and its surrounding areas



A front view and entrance of the school building



The classrooms designed for setting up laboratories



Parking lot at the school



School entrance for transportation vehicle



Waste collection and storage