



AZƏRBAYCAN RESPUBLİKASI  
TƏHSİL NAZİRLİYİ



# ***SCHOOL BASED DISASTER RISK MANAGEMENT***

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## Acronyms

ES	Emergency Situations
MoES	Ministry of Emergency Situations
DRR	Disaster Risk Reduction
SDRMC	School Disaster Risk Management Committee
SDPP	School Disaster Preparedness Plan

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## Summary

Azerbaijan is a country where natural hazards are observed frequently. These natural hazards create severe disaster risks for local communities and educational institutions. Natural disasters occurred in the country over the last 20 years were accompanied with large-scale damages. The Sendai Framework for Disaster Risk Reduction (DRR) 2015-2030 intends to conduct comprehensive actions on DRR at schools and other educational institutions. As children are more vulnerable than other persons at the same emergency situations, the document emphasizes a close integration of children and school problems into all DRR activities, plans and policies.

Since 2010, UNICEF has been implementing the Increasing Resistance of Educational Institutions and Communities to Disaster Risk in Azerbaijan Project being funded by the European Union. The official partners of the Project from the Government of Azerbaijan are the Ministry of Emergency Cases and the Ministry of Education. The Project's objectives are to: ensure fulfillment of the objectives under the Hyogo Framework for Action by the Ministry of Emergency Cases; study the key concepts of disaster risks; and manage Disaster Risks at schools. As a result, at Zagatala Region's Yeni Suvagil full education school and Sabirabad Region's Ulujali Village secondary school, selected as pilot schools, important activities towards the disaster risk reduction and management as well as strengthening the preparedness of these schools have been implemented.

The document submitted is guidance for the disaster risk management and reduction at Azerbaijani schools and for guaranteeing the school safeties. In the document, there is a methodology for disaster risk assessment and management at the Azerbaijani schools. At the same time, the application of that methodology in the pilot schools is specified and the overview of the works done at these schools is provided.

## Definitions of hazard and disaster

Hazards mean circumstances that are continually observed in nature, which can cause to material and moral losses. The hazards may turn into disasters where no preparedness actions are taken against them. Namely, even the circumstances that are regarded ordinary in nature may become a disaster for the society if no preparedness and response actions are taken by the society. For example, if a flood is observed as a hazard, the resulting submerging may destroy the school buildings and turn into a disaster. In other words, disasters are circumstances that could be harmful to a person's life, normal operation or property and upset social and economic balances.

Key harmful circumstances observed in the territory of Azerbaijan are floods, earthquakes and landslides, and droughts recently observed due to climate changes. Over the last decades, the scale of damage resulting from these natural circumstances has significantly expanded which in its turn shows the low level of preparedness of the society for such type hazards.

The total impact of the factors that question the preparedness level of any community or society for any potential hazard is vulnerability. For example, lack of early warning systems in case of flood, potential fall of school buildings due to old situation, low preparedness level of school staff, lack of an evacuation plan of school children, destroyed situation of roads and other factors are vulnerability.

A risk is an assumption for any potential result due to natural disasters. For example, the assumption of destruction of a school building as a result of earthquake is a risk. Surely, if the school building is planned for a high magnitude earthquake, then, the risk of its destruction will be significantly lesser. Or the assumption of low productivity due to drought is a risk. If we take comprehensive actions saving water, then, the risk of low productivity will be lesser.

Capacity means mobilization of the power, attributes and reserves by a community, school staff or organization in order to achieve any of their goals. For example, availability of an early warning system during floods, strength of school buildings, high preparedness level among schoolchildren and low poverty level may be regarded as capacity.

The process of addressing the factors that may cause any disasters among a community or society and increasing its preparedness level is Disaster Risk Reduction. There is a need for comprehensive efforts to reduce the risk of disaster at schools and educational institutions. And the key ones among them are reinforcing the school buildings, increasing the preparedness level of schoolchildren and establishing an early warning system.

In general, the key factors guaranteeing the safety of a school are as follows:

- ✓ Availability of an advanced legislative ground for school safety
- ✓ Active participation of stakeholders in ensuring school safety
- ✓ Compliance of school building with key safety criteria
- ✓ Use of fire resistant materials in construction of school building
- ✓ Integration of Disaster Risk Reduction issues to curriculum
- ✓ Continuous assessment of disaster risks
- ✓ Availability of a school disaster preparedness plan that is regularly reviewed and improved
- ✓ Regularly increasing knowledge and skills of teachers and students of disaster risk
- ✓ Organizing regular trainings that enable disaster risks reduction
- ✓ Access of school to information from national, regional and local warning systems
- ✓ Availability of a modern warning system at school
- ✓ Availability of a Disaster Risk Management Group at school
- ✓ Availability of a fire tap and water reservoir at school
- ✓ Availability of a school evacuation plan and regular improvement of the plan

## Legal and Institutional Framework for Disaster Risk Reduction at Educational Institutions

The Law on Education of the Republic of Azerbaijan was adopted in 2009. Article 3 of the Law establishes the key principles of the government policy on education. The first paragraph of the Article specifies health and safety, and care of and respect to environment and humans as a key priority. Under Article 32, the rights of those at educational institutions are defined, including the right to get access to safe and harmless education facilities. Furthermore, the Law emphasizes teaching of knowledge of health protection and indoctrinating related customs at all stages of education as a key direction.

The General Education Concept of Azerbaijan, that is, the National Curriculum is a key document that defines educational standards and outputs in Azerbaijan. The document was approved by Decree No 233 of 2006 of the Cabinet of Ministers. The National Curriculum is supported by the Law on Education of the Republic of Azerbaijan.

The subjects such as Life Knowledge, Military Preparedness until Conscripting and Physical Training are the key subjects focused on protection of health and safety and building of capacity in this regard. The subjects of Geography and Biology also provide enough knowledge on natural phenomena, environment and natural hazards.

Among the key standards of content of the Life Knowledge subject both at the primary and the secondary education levels, the key priorities are providing enough knowledge to schoolchildren on natural phenomena and teaching behavioral practices to be applied during any natural phenomena that may endanger safety.

At the 'Nature and Us' content line of the primary education level, a student may imagine him/her as a part of nature and understand the importance of studying nature as well as benefit from the knowledge and skills gained while contact with the nature.

According to the Health and Safety content line, a student gets awareness of the factors endangering the safety of life and complies with the learned safety rules in his/her daily life as well as can use individual and common protection means during emergency cases. Availability of a primary vision of emergency cases at all grades of the primary school, interpretation of these cases by their specific features, interpretation of the guidelines for use of accident protection means and demonstration of self-protection skills at extreme situations unnaturally created according to local conditions have been accepted as sub-standards.

Health and Safety is also one of the key content lines at the general secondary education stage. At the education stage covering from the 5<sup>th</sup> to the 9<sup>th</sup> grades, the sub-standards on these content lines get

gradually deeper and the requirements for knowledge and skills from the schoolchildren gradually increase. For example, if a student at the 5<sup>th</sup> grade is required to assess a hazard that may arise while an emergency case, the student of the 6<sup>th</sup> grade is required to explain the behaviors to be needed during an emergency case, while the student of the 7<sup>th</sup> grade is required to provide the first aid. This increase is better reflected in Schedule 1 below:

**Schedule 1: Standards and sub-standards for the Health and Safety content line at the National Curriculum**

Category	Standard	Substandard
5	Demonstrates knowledge and skills in relation to emergency cases	Assesses the hazard that may arise during emergency cases
6	Demonstrates knowledge and skills in relation to emergency cases	Clarifies the behaviors needed during emergency cases
7	Demonstrates knowledge and skills in relation to emergency cases	Provides first aid during emergency cases
8	Demonstrates knowledge and skills in relation to emergency cases	Demonstrates joint action skills in eliminating impacts of emergency cases
9	Demonstrates knowledge and skills in relation to emergency cases	Drafts projects on eliminating impacts of emergency cases

In general, as a result of the above study, we should mention that the ability of the student to act adequately during ECs and handle with them as well as disasters of various types, and availability of his/her adequate knowledge and skills on EC is fully supported by the Law on Education and the National Curriculum.

Furthermore, there are the following laws and codes directly or indirectly focused on strengthening of the school safety:

- Urban Planning and Construction Code
- Law on Fire Safety
- Law on Civil Protection
- Law on Emergency Cases

## School DRR Profile

A school DRR profile is a document providing information on DRR actions to be conducted at any school. The document contains information on hazardous phenomena observed in the territory and the history of disasters the school experienced as well as losses observed during those disasters. At the same time, the DRR profile gives information on the set of response actions to potential hazards in the territory of the school. The document also contains information on the school's DRR teams and safety system, and on regular trainings conducted with the aim to response to the hazards. The text of the DRR profile may also include other information deriving from the local specifications.



## School Disaster Risk Assessment

In assessment of a risk, potential natural disasters in the territory are determined and their possible results are evaluated. The risk assessment requires determining preparedness and vulnerability levels in communities, assessing the existing situation and determining any potential losses. The risk evaluation does not only determine which losses may arise from a disaster, but also shows the causes of the losses and suggests the ways of reducing them.

In the classical DRR literature, the disaster risks are described by the following formula:

$$\text{Disaster Risk} = (\text{Hazard} \times \text{Vulnerability}) / \text{Capacity}$$

As seen from the formula, although a high level of the hazard and vulnerability increases the risk of disaster, a high level of the capacity reduces the disaster risk. It means that a systematic increase in the capacity may prevent most of the disasters.

The following is the schedule of determining disaster risks while flood accidents.

### Schedule: Turn of flood into a disaster under certain circumstances

Hazard	Vulnerability	Risk	Risk reduction
Kura River flood	The dams along the river banks are not adequate; School building is very old.	The houses close to the dams may collapse. Children, aged people and disabled persons may lose their lives; The school building may collapse.	Reinforcing the dams along the river banks
	There are no vehicles to rescue people from flash floods.	People may lose their lives.	Availability of cars, rubber boats and life belts
	Lands under crop and pastures locate at floodplains	Harvest may get flooded. Food shortage may occur.	Planting of crops at the places where the risk of flooding is lesser; reinforcing the dams
	The school staff and population do not know when floods may occur	Cattle may lose their lives. Starvation may occur. Students and teachers may lose their lives.	Protecting pastures with dams, establishing an early warning system
	The school staff does not know what to do in case of flood	The students and teachers may lose their lives; The school building and equipment may break up	Establishing the early warning system, Preparedness of the school staff.

	The people do not have money and food reserves at safe places; The students are from poor families.	Starvation may occur after the floods.	Saving extra money reserves at banks, insuring lives and properties; Reducing poverty
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There is a need for a detailed survey to assess the Disaster Risk at the schools, which also necessitates the following studies:

- ✓ Determining hazards occurring in the territory of the school
- ✓ Collecting historical information on all hazards, by using scientific and observation data
- ✓ Determining that all phenomena alter depending on seasons
- ✓ Determining the impact of climate change on the frequency and duration of hazards
- ✓ Determining human-based risks (e.g., fire)
- ✓ Analysis of human-based actions that may increase the disaster risk in the territory
- ✓ Assessing the emergency services such as firefighting and the first aid, which are close
- ✓ Assessing resistance of the school building to hazards
- ✓ Availability and of regular updating of School Disaster Preparedness Plan
- ✓ Integrating DRR issues to curriculum
- ✓ Continuously assessing Disaster Risks
- ✓ Assessing the knowledge and skills of teachers and students on DRR
- ✓ Reviewing the regular trainings
- ✓ Availability of a modern warning system at the school
- ✓ Reviewing the work level of the Disaster Risk Management Team
- ✓ Checking the fire tap and water reservoir
- ✓ Reviewing the evacuation plan

The works shall be implemented by stages during the disaster risk assessment. These stages are systematically listed in the following schedule. (Figure 1)

**Figure 1. Stages of disaster risk assessment at schools**

#	Key stages	Actions
1	Studying the existing situation	Determining all potential hazards. Analyzing the causes, frequency and other indicators of these phenomena.
2	Assessing the existing circumstances	Determining the preparedness for impacts. (School buildings, non-structural safety, fire, equipment, DRR teams and etc.)

3	Vulnerability analysis	Determining the territory's vulnerability level. Determining the most vulnerable places at schools.
4	Risk assesment	Determining potential loses
5	Risk reduction	Determining the risk reduction capacity

### Study of Natural Conditions

Study of the natural conditions is the most important and primary requisition in assessing the disaster risk, where the party conducting the assessment gets complete information of hazards occurring in the territory and of their scales, magnitudes, dissemination areal and intensity. The most reliable way of getting information on any hazards is applying to official sources.

For example, in order to get information on hazardous hydro-meteorological phenomena, the archive materials of the Ministry of Ecology and Natural Resources may be the most reliable source. In these materials, there is information on droughts, floods, hails, waterspouts and overflows, based on accurate observations. The Catalog of Floods, prepared by the Institute of Hydrometeorology, is the most reliable source of information on hails occurred in small rivers of the country. Information on the hazards of any hydrometeorology phenomena is also obtainable from both scientific materials and the periodical press.

According to some authors, one of the most proper ways of collecting information is holding regular meetings with local communities. As a rule, the representatives of the local communities have detailed information of hazardous hydrometeorology phenomena observed in the territory of any school. The older generation usually has more information of such type. The local historical buildings, the authorities of emergency cases, libraries and newspaper materials are also good information sources.

Information on earthquakes should also be taken from official sources. As earthquakes are not frequent, the local population usually has not sufficient knowledge of this phenomenon as a rule. It is enough to say that the earthquakes occurred in Zagatala and neighbor districts in 2012 were much unexpected for the local populations. Such information is obtainable from the Republic Seismological Service Center under the National Academy of Sciences of Azerbaijan. At the same time, the seismic maps prepared by the Geology Institute of the National Academy of Sciences may be a source of information on the occurred earthquakes. In general, the territory

of Azerbaijan is a very active seismic territory in a whole and therefore, the seismic risks must be taken into consideration in the school safety assessment.

## **Review of school buildings**

Occurrence of disasters due to hazards is also closely related to the conditions of the school buildings directly. The school buildings include educational buildings, educational workshops and all other support buildings. Any buildings in an old and useless situation, not meeting technical safety criteria, significantly increase the disaster risk. For example, fall of the school building in Suvagil Village in Zagatala Region in 2012 was due to serious faults during the construction. Therefore, the conditions of the school building must be taken into consideration in assessing school disaster risks.

The practice of UNICEF suggests considering the following factors in reviewing the buildings:

- ✓ Any materials to be used in construction of the buildings shall be fireproof.
- ✓ The foundation of the buildings shall be durable
- ✓ Distance between the buildings
- ✓ Potential evacuation ways and access of the EC service to the buildings
- ✓ Corridors shall be large.
- ✓ Availability of many evacuation ways
- ✓ Symmetry between structural elements
- ✓ Vertical durability of the buildings and distribution of loads equally
- ✓ Safe connection of the building parts to each other
- ✓ Availability of standing seams between the dual parts of the buildings
- ✓ Strong resistance to side loads
- ✓ Availability of accidental standing seams on bearing walls
- ✓ Durability of upstairs against earthquakes

It should be noted that except the abovementioned conditions, the impact of other local factors should also be considered. For example, as a result of a review conducted at Ulujali Village school, it was detected that the extreme high level of salty ground waters caused a serious hazard for the school's foundation and side walls and decreased the durability of the construction.

## **Non-structural Safety**

Non-structural safety means reducing a hazard inside any buildings, which results from factors not related to the structural works. The non-structural elements include suspended roofs, windows, doors, furniture, computers, electrical devices, heating, ventilation and air-

conditioning equipment, piping and electrical systems, generators for emergency cases and similar equipment and etc.

The UNICEF practice suggests considering the following factors in reviewing the Non-structural safety level:

- ✓ Strong connection between the suspended roofs
- ✓ Reliable connection of stands, blackboards and chandeliers to walls and roofs
- ✓ Availability of automatically closing doors with a fireproof material
- ✓ Fastening of furniture to walls
- ✓ Sustainable placement of table-equipment
- ✓ Standardized electrical devices
- ✓ Placement of dustbins away from electrical devices
- ✓ Avoiding placement of heavy items on shelves
- ✓ Placement of any items that may cause harm when fall from height to floors
- ✓ Fastening information boards and other wall equipment to walls tightly
- ✓ Availability of good drain, gutter and rain water systems in the buildings
- ✓ Planting tall trees away from the buildings

In any case, non-structural reduction activities must be determined by considering the results of assessments of hazards, risks and vulnerability both at the school buildings and in the areas that are very close to the school buildings.

## **Fire Safety and Other Technogenic Safeties**

Any assessment of technogenic risks such as fire may be started with studying the conditions of the school territory and of neighbor areas jointly with the school management. A comprehensive survey of the situation enables determining all type hazards that may arise from human-based activities. In general, such hazards may come from neighbor buildings, close railways, water ditches, production entities, electrical lines and etc. At the same time, studying of the status of the use of natural resources may also assist in forecasting human-based potential hazards and in considering them in advance.

Old foundations, slopes or dams where there is likelihood of break up or landslide in the territory should be studied in terms of previous use of them. Availability of any hazardous plants, buildings or activities in neighbor territories should be checked. The representative of the MoES's local authorities should assist in hazard assessment.

Guaranteeing fire safety is one of the priorities at educational institutions. Unlike other natural hazards, the fire hazard exists at all buildings, which may significantly be reduced just by a high level of preparedness.

While designing school buildings, engineers must pay attention to fire-resistance of the buildings as a rule. Especially, use of fireproof materials during the construction has a key role in guaranteeing the fire safety.

In general, the following should be paid a special attention in reviewing the fire safety:

- ✓ Construction of the school buildings from fireproof materials
- ✓ Availability of a long distance between the buildings
- ✓ Availability of an evacuation plan
- ✓ Posting of fire safety rules at school entries and places that are visible for everybody
- ✓ Availability of wide corridors
- ✓ Availability of many accidental ways that may be opened easily
- ✓ Fireproof windows and doors
- ✓ Automatic doors
- ✓ Availability of grids on windows
- ✓ Availability of fire boards
- ✓ Availability of fire tap and water pool
- ✓ Availability of fireproof cables used at the electrical systems of the buildings
- ✓ Keeping combustibles and papers away from electrical heaters
- ✓ Conducting visual review of classrooms at the end of school days
- ✓ Diminishing use of electricity during classes as much as possible

It should be noted that the fire safety rules approved by the MoES is a rather efficient document. It is recommended to get familiarity with this document before conducting any visual review of the fire safety at schools. After getting familiar with the document, the schools' fire safety may be easily reviewed.

### **Emergency Cases Equipment**

The equipment for emergency cases is used in activities of hazard preparedness and response to emergency cases. It should be better if preparation of a tentative list of necessary equipment is conducted jointly with the local offices of firefighting and first aid. While preparing the list of the equipment, the natural conditions, hazards and schools' preparedness level should be taken into consideration. The equipment should be placed at places that are

known by everyone and that is easily visible. In the most common case, the schools should be supplied with the following equipment:

Alarm signal: Such type signals are also called the SOS signals and play an important role in transmitting any warnings on emergency cases quickly and speedily. As a rule, the use of any alarm signal while trainings for emergency cases forms strong practices on which signal will be used while earthquakes or fires among the school staff. Knowing which type signal will be used during various disasters in advance, the school staff starts to adequate response actions to that accident. For example, if the signal of earthquake is given, the schoolchildren take a shelter under their tables to prevent fall of any item down to their heads. If the signal of fire is given, the schoolchildren can search for the shortest way to outside from the windows or door.

Sound enhancers: The sound enhancers may be used either jointly with the SOS signal or independently. The sound enhancers enable disseminating news very speedily. If there is not a special SOS signal at a school, then, sound enhancers giving an alarm signal may be used.

Bells: If there is not any SOS signal or sound enhancer at a school, then, standards bells for classes may be used. As modern bells give different sounds, various bell sounds may be used while different emergency cases such as earthquakes or fires. These bell sounds should distinguish from standards bells for classes and should be regularly used while preparedness trainings that the school staff could understand what accident happened.

Cellular phones: Using cellular phones to ensure quick dissemination of information on any emergency case to all related places is a better way. The cellular phones enable contacting with the local MoES office, firefighting service, first aid service, local municipality, parents and any party who may contribute to necessary response actions.

Medical supplies: The medical supplies are used in providing first aid. As a rule, in the boxes of the first aid tools, there is the most necessary equipment for the medical aid. In any case, it would be better if the local First Aid service provided a list of the necessary medical supplies for the schools to the management of the schools.

Firefighting equipment: The firefighting equipment is available in separate firefighting shields. The equipment that should be available in the firefighting shields is determined by the local firefighting service. As a rule, this equipment include firefighting shovels, axes, mattocks, hammers, rakes, fluid sprays, sand boxes and sand pails.

Fire detectors: The fire detectors are for detecting the fume immediately when a fire starts. If a building is equipped with fire detectors, then, the source of fire is detected quickly and an automatic warning system is given.

Mobile lanterns and accumulators: The mobile lanterns are necessary for lightening corridors, rooms and other places while emergency cases. In addition to such type lanterns, it is also advised to use temporary electrical sources and accumulators.

## **School Disaster Management Committee**

Planning of disaster management at schools should include the school management, teacher staff and students, and local community, local authorities and parents. A high preparedness level of a school staff is as important as the natural conditions and school conditions in disaster risk reduction.

As the planning of an effective preparedness for disasters starts from the higher level of the school management, undertaking and understanding of this process by the school principals is crucial. The school principals must ensure management of disasters at the schools by support of teachers, responsible persons for disasters at the local level and of parents.

There is also a need for joint partnership for implementation of disaster risk reduction and disaster preparedness activities at schools and pre-school educational institutions. The interested parties to be involved in the disaster management at the schools, who will contribute to this activity, should be determined by establishing a School Disaster Risk Management Committee (SDRMC). The school principals should act as the chairs of the SDRMCs and should appoint those who will substitute them when they are absent.

The SDRMC should be established by the active participation of the school management. The key objective in the establishment of the SDRMC is to ensure accountability and responsibility during the disaster preparedness and disasters. The key objectives and responsibilities of the SDRMC are as follows:

- ✓ Drafting a disaster preparedness and response plan to emergency cases, the School Disaster Preparedness Plan at the school
- ✓ Organizing DRR teams to protect the safety of the school staff and involving the schoolchildren in these DRR teams
- ✓ Arranging disaster seminars, training workshops and exercises



- ✓ Keeping regular relations with the local first aid, firefighting and MoES offices
- ✓ Benefitting from all other means to ensure the safety of the school staff

Participation of schoolchildren of high grades in the DRR teams that should be established by the initiatives of the SDRMCs is very important. However, there is a need for availability of 1 to 2 teachers at each team that is also important, which may enable more effective operation of the teams. The titles and duties of the DRR teams are provided below in Table 2.

**Table 2: Disaster Risk Reduction Teams and Their Duties**

Title of Team	Vəzifələri
Evacuation team	Studying various evacuation ways; Evacuating wounded people and taking them to the first medical aid stations; Further examination of rooms
First Medical Aid team	Providing first medical aids
Firefighting team	Evacuation of those under hazard jointly with the evacuation team; Firefighting by using fire extinguishing equipment
Communication team	Providing information to local EC, firefighting and first aid offices by using all possible means during emergency cases

Besides the teachers, the community members, executive and municipality representatives, the representatives of the authorities for emergency cases and for district educational departments, and parents and students of high grades may also join the SDRMCs.

The SDRMCs are responsible for general management of disasters at the school level. One of the key functions of the Committee is to establish clear communication lines with responsible officers for management of emergency cases; educational authorities; and those who implement early response actions to emergency cases at the district level. In order to make the authorities responding to emergency cases familiar with the relevant schools, relations should be established with them.

As the DRR and disaster preparedness require a joint work of various partners and exchange of information between them, communication between the stakeholders is crucial. In order to ensure protection of the children by the schools and local authorities, interconnection between the families, communities and district educational authorities and EC departments is very important.

The SDRMC should also determine the types of emergency cases that may occur at the schools and which actions (that is, stimulators) may activate the school disaster preparedness plan.

## **Regular Trainings and Information Boards**

Awareness raising is among the most important elements of the school safety. The awareness raising process may be organized both in a general form and in the form focused on needs. For example, after each exercise process, the fact for what else information the school staff needs to learn is detected and a training is organized accordingly. Experts and the local MoES Department's staff may also be involved in the trainings.

The information boards should be brief and readable. Such boards enable dissemination of information and of knowledge more easily. On the information boards, there is generally pictured information on which response actions have been taken before and after emergency cases, on the first medical aid and etc.

## **Disaster Preparedness Exercises**

One of most important actions focused on the school disaster risk reduction is organization of regular disaster preparedness exercises, which contribute to testing of all structural and non-structural actions towards the school DRR and examining the preparedness level of the school staff. The exercises also serve to determining the need for trainings, detecting new needs and actively learning new knowledge and practices.

Usually, several hazards may be observed in the territory of each school. Besides the hazard of fire, Azerbaijani schools suffer from floods, earthquakes and landslides more. And sometimes, the earthquakes may be followed by resulting fires then, which necessitates organization of separate exercises per hazard. For example, the school staff may take various response actions in disasters such as earthquakes, floods or fires.

The first reaction required by the school staff in case of an earthquake is to prevent fall of heavy items to heads. And after the earthquake, the school staff is required to move to the gathering station calmly and search for their comrades first. If any of the schoolmates is absent in the gathering station, the rescue team is immediately informed of it. If the rescue team is extremely busy, then, the schoolchildren themselves should search for their mates who are absent and provide aid to them, if needed.

The ability of building of roughly the following skills by the exercises for various hazards is specified in the below Table 3.

**Table 3: Skills to be Learned during Exercises for Hazards**

Type of Hazard	Skills to be Learned
Earthquake	Preventing bodily damage; moving down, moving to the station of gathering
Flood	Moving up to high places; if the scale of a flood is not large, moving up to higher floors or penthouse
Fire	Individual protection from choking, departure from ways for accidents, removing burning items outside, using fire extinguishing equipment to extinguish the fires in case of small-scaled fires
At all types of hazards	Rescuing comrades, first medical aid, call for help, use of communication means

There are three useful forms of exercises: simple exercises focused on specific skills and practices that may look unnatural first; table exercises, particularly for the purposes of management and school leadership, emphasizing various coordination duties; and full-scale scenarios including all members of a community.

The scenario exercises enable testing of coordination of a functional organization of the response actions including operational skills such as protection of life, safety, nutrition, accommodation, water and sanitation supply, simple search and rescue to provide psychological and social support, fire extinguishing, control over hazardous materials, and logistical skills. The scenario exercises would be more useful when they are implemented by involving the local first aid and firefighting teams.

## **School Disaster Preparedness Plan**

A SDPP is a document determining the key functions of a school in the process of preparation for emergency cases and during hazards. This document is developed with participation of the local firefighting and MoES departments and is approved by the school management. The document should be brief and informative as much as possible and does not contain any unnecessary texts. There should be information of 1 page, or maximum 2 pages in most important cases per part of the document, which makes the document readable.

There must be the following parts in the document:

1. School's DRR profile. In the DRR profile, the school's brief DRR history and brief information on current activities are provided.
2. SDPP's goal and objectives. This part also provides information on the objective of development of the SDPP document and on its key goals. The document also includes information on the SDPP's objectives.
3. Definitions and terminology. This part includes the key SRR definitions and terms. This part clearly explains the definitions of hazard, disaster, risk, vulnerability, capacity and etc.
4. Vulnerability and capacity assessment. In this part, the structural and non-structural safeties of the school are assessed. This part includes information on the conditions of the school buildings, analysis of hazards and evaluation of risks.
5. School Disaster Management Committee. In this part, information on the SDRMC and on its activity, implemented activities and taken measures focused on DRR. This part also provides information on DRR teams and their members. This part should contain information on the obligations of each member of the DRR teams.
6. Equipment for emergency cases. In this part, information on all DRR equipment is provided. This information should also be accompanied with relevant schemes or maps, containing information on the locations and of rules of exploitation of the equipment.
7. School Utility Scheme. This part contains information on key water, electricity, telephone and heating power lines.
8. Evacuation and gathering. This part contains information on key evacuation procedures such as isolation, signaling, moving down, gathering and etc. This part should also contain brief information on the location of gathering.
9. Duties during hazards. This part contains information on the key duties of each member of the school staff during disasters.
10. Useful telephone numbers. These telephone numbers are provided on the first or last page of the document. This part shall contain contact numbers of the MoES, firefighting department, first medical aid and local police department.
11. The document may include the following annexes: Maps of schools and communities; Log-book of response actions to emergency cases, (for registration of any implemented response activities to disasters) and etc.

## **Vulnerability assessment**

After an analysis of all reviews and the existing conditions, vulnerability assessment shall be performed. Regular assessment of the vulnerability contributes to rapid detection and solution of any problems existing at the schools. A school-based assessment prefers assessment of the statuses of the school staff and particularly schoolchildren as members of the team rather than assessment of their personal problems. During such type assessments, the schools' natural

conditions, the structural and non-structural safeties of the school buildings, the schools' preparedness level and any other issues resulting from the safety of the schools are assessed. In order to draft a school disaster preparedness plan, responsive measures for each detected hazard and risk or vulnerability should be considered, assessed and selected. Assessment acts as a foundation for drafting of comprehensive preparedness plans.

The vulnerability assessment has been drafted exclusively for Azerbaijani schoolchildren and must be adjusted for the local conditions when it is applied in other areas. In this assessment, the natural conditions, the structural and non-structural safeties and the preparedness level of the school staffs were taken into account.

Any vulnerability assessment should be conducted by a check-list. Each indicator consists of answers of Yes and No. (See Table 4) Each 'Yes' answer is scaled by '0', while each 'No' is scaled by '1'. At the end, the obtained figures are added and the resulting total figure becomes the indicator of the vulnerability, which in its turn enables to determine the level of disaster risks. In this case, the school with the lowest degree of preparedness for disaster risks gets 40 scores, while the school with the highest degree of preparedness gets 0 scores.

#	Indicators	No /Yes	Comments
1	School does not locate in a flood region	1/0	
2	School does not locate in an earthquake region	1/0	
3	School does not locate in a landslide area	1/0	
4	Distance between buildings is high	1/0	
5	EC was considered in school construction	1/0	
6	Access to potential evacuation ways is easy	1/0	
7	There is symmetry between structural elements	1/0	
8	Vertical and side durability is reliable at educational buildings	1/0	
9	Structural elements were safely connected to each other	1/0	
10	Side loads at the building are distributed reliably	1/0	
11	Connection walls were built properly	1/0	
12	There are holes in bearing walls	1/0	
13	Durable materials were used	1/0	
14	There is distance between structural columns and partitions	1/0	
15	Direct transmission of loads to ground is ensured	1/0	
16	Bearing walls are connected strongly	1/0	
17	Construction elements outside school are reinforced with structural elements	1/0	
18	Construction elements inside schools are reinforced with structural elements	1/0	
19	Furniture and other elements were fastened to walls	1/0	
20	Ladders are earthquake resistant	1/0	
21	Rooms may get insulated from other constructions in case of fire	1/0	
22	School was built from fireproof materials	1/0	

23	School has access to water and there is a pool at the school yard	1/0	
24	There is a warning system at the school	1/0	
25	Ceiling roofs, chandeliers and book-shelves were fastened strongly	1/0	
26	Schoolchildren have a comprehensive awareness of natural conditions	1/0	
27	School safety is assessed regularly	1/0	
28	School has modern air-conditioning and heating systems	1/0	
29	School has an evacuation plan	1/0	
30	School has a Disaster Preparation Plan	1/0	
31	School has a Disaster Risk Management Committee	1/0	
32	Regular DRR exercises are performed	1/0	
33	DRR issues are integrated into curriculum	1/0	
34	There is awareness-raising activity at school	1/0	
35	School may be used as a shelter in emergency cases	1/0	
36	There is fire extinguishing equipment at school	1/0	
37	There is a hospital in the residential area where the school is located	1/0	
38	The road network is well-developed in the area where the school is located	1/0	
39	The residential area where the school is located is easily accessible at any season	1/0	
40	The area where the school is located is easily accessible for firefighting service	1/0	

**Table 4: Table of Vulnerability Assessment**

As seen, the scores range between 0 and 40 in assessment of the vulnerability. Dividing these scores into intervals, we can get the scale given for the school we assess in the below table 5.

**Table 5: Scale of Vulnerability Assessment**

Scale of vulnerability	Score	Vulnerability status	Key conditions increasing vulnerability
5	Higher than 30	Very high	
3	21-30	High	
4	11-20	Medium	
2	6-10	Low	
1	Lower than 6	Very low	

Once the assessment process according to the above provided scale is finished, the document is jointly discussed with the local municipality and educational and executive authorities. After joint discussions, an action plan for reducing the school vulnerability which should include the following activities is drafted:

- Addressing the factors causing deterioration of the school foundation
- Supplying the target schools with necessary tools to increase fire safety
- Supplying the fire boards of the schools with necessary equipment
- Supplying the Warning Systems of the schools with modern equipment

- Fastening the shelves that may cause hazard for disaster risk reduction in case of earthquake to walls
- Establishing a SDRMC and drafting a SDPP
- Drafting school evacuation plans
- Establishing DRR teams consisting of the teachers and the schoolchildren
- Raising the knowledge of the SDRMC and DRR teams
- Conducting regular exercises for fires, earthquakes and floods

All measures focused on the vulnerability reduction are called responsive measures, which include structural and non-structural improvement. Furthermore, a range of social projects implemented in the areas where the schools are located may also contribute to the school vulnerability reduction. In addition to local measures, any measures to be implemented at the national level may also assist in empowerment of the schools. The national-level measures may include passing new laws and approving national development programs.

## **Selection of Pilot Schools for Third Stage of Project**

Since 2010, UNICEF has been implementing the Increasing Response of Educational Institutions and Communities to Disaster Risk Project, being funded by the European Union. One of the key objectives of the Project is to strengthen DRR activities by selecting two pilot schools and developing them into best ones. UNICEF has prepared several criteria for selection of pilot schools, which are specified below:

- Benefitting from the DRRR component of the projects implemented by UNICEF since 2012
- An active support of DRR actions in the day-to-day lives of the schools and implementation of response activities at the schools in compliance with national and international standards
- Involvement of the schools in various DRR actions by the government in the Days of Civil Protection and DRR
- Taking a very active part in implementation of DRR actions at their schools and communities
- Availability of various DRR teams at the schools
- Willingness of the school management in participation in the UNICEF projects
- Availability of own experience in reducing human-based and natural disaster at the schools

6 schools were assessed for the above listed criteria, where Sabirabad Region's Ulujali Complete Education School and Zagatala Region's Yeni Suvagil Complete Education School were selected as pilot schools for the third stage of the project.

DRR profile of Sabirabad Region's Ulujali Village Complete Education School

## **Disaster Risk Assessment at Yeni Suvagil Village Complete Education School**

### **School DRR Profile**

Zagatala Region's Yeni Suvagil Complete Education School No 1 after Mina Nazirova was established at Yukhari Suvagil Village in 1924. The school then was displaced to its current location due to displacement of Yukhari Suvagil Village in 1951. At present, there are 366 students at the school. The school has 51 teachers.



In 1987, a new 3-floor building was constructed for the school. On May 7, 2012, at 9.45 a.m. there were 7-score earthquakes with an epicenter that was very close to that area. It must be noted that all the teachers and the students were at the school at the time of earthquakes, although the adequate preparedness level completely prevented any human loss. On May 18, the same severe shock repeated. As a result of those two earthquakes, the school building destroyed entirely.

As the school locates at a seismically active zone, possibility of periodic earthquakes is forecasted in the area. The latest earthquake shows that this hazard may occur at any time, which necessitates a high preparedness level among the schoolchildren.

At present, there is a SDRMC operating at the school. The SDRMC members regularly operate not only during earthquakes, but also for adequately guiding the school staff during fires and floods. There are DRR teams at the school. The team members continuously increase their preparedness level by attending various training workshops. The members of the rescue team consisted of the schoolchildren have separate duties. In order to keep the high level of the school's disaster preparedness, continuous exercises for floods, fires and earthquakes are arranged.

Currently, the school has a pilot school status selected within the framework of the Increasing Response of Educational Institutions and Communities to Disaster Risk Project, being funded by the European Union and implemented by UNICEF. This Project's local partners are the Ministry of Education and the Ministry of Emergency Cases of the Republic of Azerbaijan. Within the framework of the Project, trainings were conducted for the SDRMC and the DRR team members.

## **Hazards**

As the area where Suvagil Village locates has a very opulent nature, hazards of various origins are observed here. The area has a very active seismic nature. The earthquakes happened in 2012 destroyed the school building entirely. The water of the artesian well in neighborhood significantly decreased. In the Catalog of Floods, prepared by the Institute of Hydrometeorology, the area is mentioned as an area with frequently happening floods.

## **School Buildings**

The school building was reconstructed after getting destroyed during 2012 earthquakes. The reconstruction was implemented under the direct control of the MoES. At present, the

building's seismic durability is scaled as 9. The school building includes three buildings, separated from each other by standing seams. The corridors are wide and the bearing columns and walls are reliable. Although the school was not built from fireproof materials, there are many evacuation ways which are easily accessible. The buildings are symmetric, and the resistance to the side loads is strong. The vertical durability and the equal distribution of the loads are ensured. The ladders are resistant to earthquakes. The stands, boards and chandeliers have been reliably fastened to the walls. The book-shelves and other furniture have been also fastened to the walls completely.

### **School Emergency Cases Equipment**

The school is well equipped with EC equipment. In the entry of the school, there is a SOS device. There are also sound intensifiers at the school. The school was connected to the local line telephone network. The school staff uses cellular phones.

The school is highly equipped with fire extinguishing supplies. There are fire shields at each floor of the school. There are a fire shovel, axe, mattock, hammer, rake, fluid spray, sand box and sand pail at the school. However, there is not any fire detector. There are medical supplies and aid stretcher that may be used for the first aid at the school. There are several mobile lanterns that may be used during accidents.

### **Regular Trainings and Information Boards**

Continuous exercises are conducted at the school. The exercises are particularly organized for earthquake and fire cases. The local first aid and firefighting departments are involved in the exercises. The observations show that the school staff demonstrates a complete preparedness during the exercises. The schoolchildren are able to perform necessary response actions when the accident signal is given. The schoolchildren gathered to the gathering section search for their schoolmates and assist conditional wounded ones.

There are sufficient information boards on EC at the school, which explain readably and clearly what to do in cases of fire or earthquake.

## School Disaster Preparedness Plan

The School Disaster Preparedness Plan has been drafted with assistance of UNICEF's DRR expert. The document includes responsive actions to be taken by the school staff in case of fire, earthquake or other EC. The document has a clear language and is readable. The vulnerability assessment part is continuously updated. The document also contains a structural and non-structural assessment of the school; the conditions of the school buildings; and an assessment of the hazards. Besides this, it contains information on the members of the SDRMC and DRR teams and of their objectives and responsibilities. The SDRMC also includes other issues that must be included in the SDPP.

## Vulnerability Assessment

The process of vulnerability assessment shows that the school safety is reliable. The result of the assessment is provided in the following table. According to the assessment, the school's vulnerability level may be considered satisfactory (5 scores) and this situation is fully under control.

**Table 6. Vulnerability Assessment for Yeni Suvagil School**

#	Indicators	No /Yes	Comments
1	School does not locate in a flood region	1/0	1
2	School does not locate in an earthquake region	1/0	1
3	School does not locate in a landslide area	1/0	0
4	Distance between buildings is high	1/0	1
5	EC was considered in school construction	1/0	0
6	Access to potential evacuation ways is easy	1/0	0
7	There is symmetry between structural elements	1/0	0
8	Vertical and side durability is reliable at educational buildings	1/0	0
9	Structural elements were safely connected to each other	1/0	0
10	Side loads at the building are distributed reliably	1/0	0
11	Connection walls were built properly	1/0	0
12	There are holes in bearing walls	1/0	1
13	Durable materials were used	1/0	0
14	There is distance between structural columns and partitions	1/0	0
15	Direct transmission of loads to ground is ensured	1/0	0
16	Bearing walls are connected strongly	1/0	0
17	Construction elements outside school are reinforced with structural elements	1/0	0
18	Construction elements inside schools are reinforced with structural elements	1/0	0
19	Furniture and other elements were fastened to walls	1/0	0
20	Ladders are earthquake resistant	1/0	0
21	Rooms may get insulated from other constructions in case of fire	1/0	1
22	School was built from fireproof materials	1/0	0
23	School has access to water and there is a pool at the school yard	1/0	0

24	There is a warning system at the school	1/0	0
25	Ceiling roofs, chandeliers and book-shelves were fastened strongly	1/0	0
26	Schoolchildren have a comprehensive awareness of natural conditions	1/0	0
27	School safety is assessed regularly	1/0	0
28	School has modern air-conditioning and heating systems	1/0	0
29	School has an evacuation plan	1/0	0
30	School has a Disaster Preparation Plan	1/0	0
31	School has a Disaster Risk Management Committee	1/0	0
32	Regular DRR exercises are performed	1/0	0
33	DRR issues are integrated into curriculum	1/0	0
34	There is awareness-raising activity at school	1/0	0
35	School may be used as a shelter in emergency cases	1/0	0
36	There is fire extinguishing equipment at school	1/0	0
37	There is a hospital in the residential area where the school is located	1/0	0
38	The road network is well-developed in the area where the school is located	1/0	0
39	The residential area where the school is located is easily accessible at any season	1/0	0
40	The area where the school is located is easily accessible for firefighting service	1/0	0
	Total		5

## Disaster Risk Assessment at Ulajali Village Complete Education School

### School DRR Profile

The Ulajali Village School was established in 1931. At present, there are 624 students at the school. The number of the teachers is 62. As the school is located very close to Kura River, it periodically suffers from floods. The observations performed over the last 150 years confirm that Kura River flooded in 1890, 1915, 1936, 1942, 1944, 1946, 1952, 1969, 1976, 2002, 2003 and 2010. The flood occurred on May and June of 2010 created submerging with thickness between 1 and 2 m in the territory of the school. As a result of this submerging, the floor of the schools completely destroyed and the school supplies became useless.

After putting the Mingachevir Water Reservoir into service in 1953, no flood occurred in the area over 15 years. It was thought for a long time that the adequate management of the Mingachevir Water Reservoir would end floods forever. However, the last floods show that this hazard may occur at any time, which strongly necessitates a high preparedness level of the schoolchildren in this regard.

At present, there is a SDRMC consisted of 15 members, operating at the school. The SDRMC members regularly operate not only during floods, but also for adequately guiding the school staff during fires and earthquakes. The SDRMC members continuously increase their preparedness level by attending various training workshops. Several DRR teams have been

organized from the schoolchildren and the teachers and each of the team members has separate duties.

In order to keep the high level of the school's disaster preparedness, continuous exercises for floods, fires and earthquakes are arranged. Currently, the school has a pilot school status selected within the framework of the Increasing Response of Educational Institutions and Communities to Disaster Risk Project, being funded by the European Union and implemented by UNICEF. This Project's local partners are the Ministry of Education and the Ministry of Emergency Cases of the Republic of Azerbaijan. Within the framework of the Project, trainings were conducted for the SDRMC and the DRR team members.

## Hazards

Ulajali Village is located at a completely flat area. The school is very close to Kura River. Floods and earthquakes are the key hazards that may be observed. According to the observation data of the National Hydrometeorology Department, floods are very frequent in the area. As a result of the flood occurred in 2010, the school was submerged and the school buildings became completely useless. The territory is a very active seismic area.

## School Buildings

The school building was repaired after the flood of 2010. The construction was conducted directly under the control of the MoES. Currently, the seismic durability of the building is scored as 8. The school building contains four buildings. Three of the buildings are located next to each other, while the fourth building locates at a large distance. The school building has been separated from each other by standing seams. The corridors are wide and the bearing columns and walls are reliable. Although the school was not built from fireproof materials, there are many evacuation ways which are easily accessible. The buildings are symmetric, and the resistance to the side loads is strong. The vertical durability and the equal distribution of the loads are ensured. The ladders are resistant to earthquakes. The stands, boards and chandeliers have been reliably fastened to the walls. The book-shelves and other furniture have been also fastened to the walls completely.

During the repeated reviews in 2015, it was detected that the level of the ground waters was very high. As the ground waters were also salty, such a high level was gradually destroying the school's foundation and was damaging its inside part. At the expense of the funds allocated by UNICEF in 2015, the drain network in the territory has been repaired, which resulted in a

significant decrease in the level of the ground waters. At the expense of those funds, also the destroyed part at the ground floor was restored.

### **School Emergency Cases Equipment**

The school is well equipped with EC equipment. However, there is not a SOS device. There are also sound intensifiers at the school. The school was connected to the local line telephone network. The school staff uses cellular phones.

The school is highly equipped with fire extinguishing supplies. There are fire shields at each floor of the school. There are a fire shovel, axe, mattock, hammer, rake, fluid spray, sand box and sand pail at the school. However, there is not any fire detector. There are medical supplies and aid stretcher that may be used for the first aid at the school. There are several mobile lanterns that may be used during accidents.

### **Regular Trainings and Information Boards**

Continuous exercises are conducted at the school. The exercises are particularly organized for floods and fire cases. The local first aid and firefighting departments are involved in the exercises. The observations show that the school staff demonstrates a complete preparedness during the exercises. The schoolchildren are able to perform necessary response actions when the accident signal is given. The schoolchildren gathered to the gathering section search for their schoolmates and assist conditional wounded ones.

There are sufficient information boards on EC at the school, which explain readably and clearly what to do in cases of fire or earthquake.

### **School Disaster Preparedness Plan**

The School Disaster Preparedness Plan has been drafted with assistance of UNICEF's DRR expert. The document includes responsive actions to be taken by the school staff in case of fire, earthquake or other EC. The document has a clear language and is readable. The vulnerability assessment part is continuously updated. The document also contains a structural and non-structural assessment of the school; the conditions of the school buildings; and an assessment of the hazards. Besides this, it contains information on the members of the SDRMC and DRR teams and of their objectives and responsibilities. The SDRMC also includes other issues that must be included in the SDPP.

## Vulnerability Assessment

The process of vulnerability assessment shows that the school safety is reliable. The result of the assessment is provided in the following table. According to the assessment, the school's vulnerability level may be considered as low vulnerability (12 scores) and this situation is fully under control.

**Table 7. Vulnerability Assessment for Ulajali School**

#	Indicators	No /Yes	Comments
1	School does not locate in a flood region	1/0	1
2	School does not locate in an earthquake region	1/0	1
3	School does not locate in a landslide area	1/0	0
4	Distance between buildings is high	1/0	0
5	EC was considered in school construction	1/0	1
6	Access to potential evacuation ways is easy	1/0	0
7	There is symmetry between structural elements	1/0	0
8	Vertical and side durability is reliable at educational buildings	1/0	0
9	Structural elements were safely connected to each other	1/0	0
10	Side loads at the building are distributed reliably	1/0	0
11	Connection walls were built properly	1/0	0
12	There are holes in bearing walls	1/0	1
13	Durable materials were used	1/0	0
14	There is distance between structural columns and partitions	1/0	0
15	Direct transmission of loads to ground is ensured	1/0	0
16	Bearing walls are connected strongly	1/0	0
17	Construction elements outside school are reinforced with structural elements	1/0	0
18	Construction elements inside schools are reinforced with structural elements	1/0	0
19	Furniture and other elements were fastened to walls	1/0	0
20	Ladders are earthquake resistant	1/0	0
21	Rooms may get insulated from other constructions in case of fire	1/0	1
22	School was built from fireproof materials	1/0	1
23	School has access to water and there is a pool at the school yard	1/0	0
24	There is a warning system at the school	1/0	0
25	Ceiling roofs, chandeliers and book-shelves were fastened strongly	1/0	0
26	Schoolchildren have a comprehensive awareness of natural conditions	1/0	0
27	School safety is assessed regularly	1/0	0
28	School has modern air-conditioning and heating systems	1/0	1
29	School has an evacuation plan	1/0	1
30	School has a Disaster Preparation Plan	1/0	0
31	School has a Disaster Risk Management Committee	1/0	0
32	Regular DRR exercises are performed	1/0	0
33	DRR issues are integrated into curriculum	1/0	0
34	There is awareness-raising activity at school	1/0	0
35	School may be used as a shelter in emergency cases	1/0	1

36	There is fire extinguishing equipment at school	1/0	1
37	There is a hospital in the residential area where the school is located	1/0	1
38	The road network is well-developed in the area where the school is located	1/0	0
39	The residential area where the school is located is easily accessible at any season	1/0	0
40	The area where the school is located is easily accessible for firefighting service	1/0	1
	Total		12

## Summary

According to the conducted surveys, a new methodology enabling to assess the Disaster Risks at Azerbaijani schools has been drafted, which also enables reviewing the most important elements ensuring the school safety. For the vulnerability assessment, a scale with special figures is suggested. The scale enables to detect all shortcomings of the school safety. The scale also enables to evaluate the vulnerability levels of various schools and the existing risks.