



Module 9

Managing risk in the school

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Rise Up Against Climate Change!

A school-centered educational initiative
of the Inter-American Development Bank

Rise Up

Against Climate Change

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educational initiative
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Development Bank

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Rise Up

Against Climate Change



Climate change poses new hazards to schools and heightens preexisting ones. Every day we hear news of some community in the world being adversely affected by natural phenomena such as excess water (floods, landslides), extreme winds, or drought. Such events may leave communities without access to a reliable supply of drinking water, create conditions conducive to the spread of fires, force school closures, and affect the economy.

Schools mirror their communities. Just as they face the same risks, they can implement some of the same strategies to counteract the factors that generate those risks—lowering them and mitigating the possibility of disaster.



Understanding risk management

Students, teachers, principals, parents, and school administrators spend a major portion of their lives at school or engaged in school-related activities. They have a right to know that, to the extent humanly possible, the school is ready to face the **threats** (or hazards) to which it may be exposed, whether to the school infrastructure or to the people inside it. Even without causing physical destruction, these threats can affect school conditions and hinder children's schooling.

Parents have a right to trust that the school can provide a safe haven to their children, even when an emergency or disaster occurs in the community. Students, too, have a right to trust that they are safe on school grounds.

Risk management encompasses the measures that a society takes to address the factors that pose risks (hazard and vulnerability), reducing those risks and preventing them from causing disasters. Risk management also includes the necessary measures to ensure that, in case of an emergency or a disaster, the society can respond in a timely and appropriate manner and repair the damage generated, taking into account the need to avoid another buildup of the factors that led to the disaster.

In this module we are going to observe how we can apply this set of measures at school.



Identifying the problem

Most disasters are not sudden, unexpected events that just happen *out of the blue*—human society can prevent or at least decrease their damaging effects. Disasters are magnified when humans do not do enough to manage the risks that affect their communities, risks that in turn arise from the convergence of two factors: hazards and vulnerabilities. Using proper risk management, it is possible to avoid triggering certain risks, to diminish others, and to prevent risks from leading to disasters. Community members must also be prepared to act appropriately and in time when an unavoidable disaster occurs. This is called *preparedness*, and it is an integral part of risk management.

A hazard is any phenomenon or event that poses a danger to someone: in this case to the school and the educational community. Different types of hazards are classified according to their origin:

- **Natural hazards** are traceable to some natural phenomenon. Examples are earthquakes, volcanic eruptions, flooding, tornadoes, or hurricanes.
- **Anthropogenic hazards** stem from human activities, such as armed conflict, the presence of landmines en route to a school or in its vicinity, the sale of illegal drugs, or from accidents in or near the school.
- **Socionatural hazards** involve phenomena that occur in nature but that are directly or indirectly produced or exacerbated by human activities. Examples include flooding due to blockage of rivers and streams and landslides produced by highways or other construction built without necessary precautions. From this perspective, **the effects of climate change can be considered socionatural hazards**, as they are nature's responses to the

increase in greenhouse gases (GHGs) caused by human activity and changes in land use.

A hazard needs not affect people or infrastructure. A heavy rainstorm poses a danger only inasmuch as we expose ourselves to it without proper protection—an umbrella or raincoat, for example (figure 1). If we are healthy and our clear intention is to go out and play in a rainstorm, the hazard may actually be a source of entertainment. But if our immune system is weak, we run the risk of becoming ill from our contact with the rain. If we walk or drive in a very heavy rain, we may expose ourselves to the danger of poor visibility or flooding.

To describe the weakness of an individual, a community, a building, or an entire country to withstand the effects of a hazard, we use the term *vulnerability*. From this standpoint, the opposite of vulnerability is *strength* or *resistance*. It is important not to confuse strength with inflexibility, as many times the ability of an individual to resist the effects of a hazard depends on flexibility. Consider how a palm tree or a bamboo stalk bends to resist the force of a strong wind. The same occurs with an institution or a community: The more flexible it is, the more quickly it can adapt to resist the effects of a hazard. A school that cannot flexibly adapt its schedule or methods in the event of a disaster is significantly more vulnerable than another that manages to quickly adjust to its new set of circumstances.

What would happen if a hazard were suddenly to materialize in a school or community that were vulnerable to its effects? The answer is *risk*. Risk is just that: the result of the combination of hazard and vulnerability.

Hazard x Vulnerability = Risk

For example, the risk of getting wet in a rainstorm when you are already weak or sick is that you might catch pneumonia. However, keep in mind that we are considering *what could happen*, not what has already happened.

Figure 1. Hazard, vulnerability, risk, and risk management

In our example, risk turns into a *disaster* when somebody actually does come down with pneumonia as a result of getting wet in a rainstorm.



Point out the differences between the images in response to the following questions

- | | | | |
|---|--|---|--|
| 1 What hazards are the children facing on their way to school? | 2 In what ways are they vulnerable? | 3 What could happen to them as a result of the hazards they face? In other words, what risks do they face? | 4 In the picture on the right, how have those risks been managed? |
|---|--|---|--|

Who is responsible for addressing the problem?

Responsibility for carrying out appropriate, timely risk management at school lies with the school's highest authority, usually the principal, who may rely on others (such as a board of directors or local school board) for support and guidance.

Risk management is an inescapable duty of the school's principal, who is responsible not only for regular academic activity, but also for the lives of teachers, students, workers, and everyone else present in the school at any given time. Risk management is best done by formulating and implementing a School Risk Management Plan.

Often the technical and financial resources necessary to carry out risk management are not included in the school budget. In that case, the responsibility of the school administration is to manage available resources to ensure both quality education and the safety of the individuals in the school. If the resources available are insufficient to achieve these goals, the local, provincial, state, regional, or national authorities (depending on each country's political structure) are responsible for providing more resources.

The responsibility of parents, students, and those working in the schools is to demand that school principals and boards fulfill their obligation to handle risk management at the school, to form and participate in committees or work teams for this purpose, and to lend support in making problems known to the authorities and eliciting the help of the wider community. Various actors responsible for carrying out specific activities within the School Risk Management Plan are suggested in this module.

It is clear that risk management is not something that can be performed by one person alone, but requires the active, enthusiastic, and committed participation of the entire school community.

The School Risk Management Plan and related School Emergency Plan are useful only if the school community has a genuine interest in carrying them out. The plans are tangible tools for protecting the school community's rights to life, health, and education. When this is understood, the members of that community will surely insist that the school have such plans in place.

Creating a school risk management plan

The School Risk Management Plan describes how the school community will deal with hazards (anthropogenic, natural, and socionatural) and related vulnerabilities. The steps in preparing the plan are illustrated in figure 2.

After making the decision to devise a plan (good choice!) and assembling a team to bring the plan into being, the next step is to understand, through analysis conducted by the team, the hazards to which the school is exposed, the vulnerabilities of the school and its community, and the strengths the community brings to the task of reducing risk. Once that analysis is complete, the next steps are to reduce hazards and vulnerabilities wherever possible and to prepare the school's response to risks that become reality.

As noted in the previous section, many hazards cannot be prevented, but disasters can—usually by reducing vulnerability.

Natural hazards, that is, manifestations of natural dynamics (such as earthquakes or hurricanes) are often impossible to influence or prevent. The same applies to the natural component of a socionatural threat (such as a flood or a landslide resulting from the combination of improper handling of a watershed and a heavy rainy season). In such cases, preventing disaster depends on lowering vulnerability.

Hazard x Vulnerability = Risk



If vulnerability can be lowered to near zero then, even though the hazard itself cannot be reduced, the result—that is, the risk—will likewise approach zero. In practice it is impossible to eliminate risk completely, but it is possible to lower it to acceptable levels.

Hazard x Vulnerability = Risk



But when hazards are anthropogenic (that is, due to human actions or omissions), such as when poorly maintained school facilities and equipment or a gas leak lead to accident-causing conditions, the hazard must be dealt with directly.

Suppose the problem is that the stairs have no handrails, several of the wooden steps have rotted away, and the night bulb lighting the stairs is burned out. People who need to use these stairs, especially at night, are vulnerable and could be severely injured or even killed if the stairway gives way while in use.

In this case, because the hazard is due to human error, both hazard and vulnerability can be lowered—by replacing the steps that are in poor condition and building a railing; and by installing suitable lighting and taking the necessary precautions when using the stairs. Of course, the closer that both factors in the equation approach zero, the closer the risk comes to zero.

Dealing with the socionatural hazard of climate change is a two-step process involving *adaptation* and *mitigation*. Here, too, however, the emphasis is on reducing vulnerability.

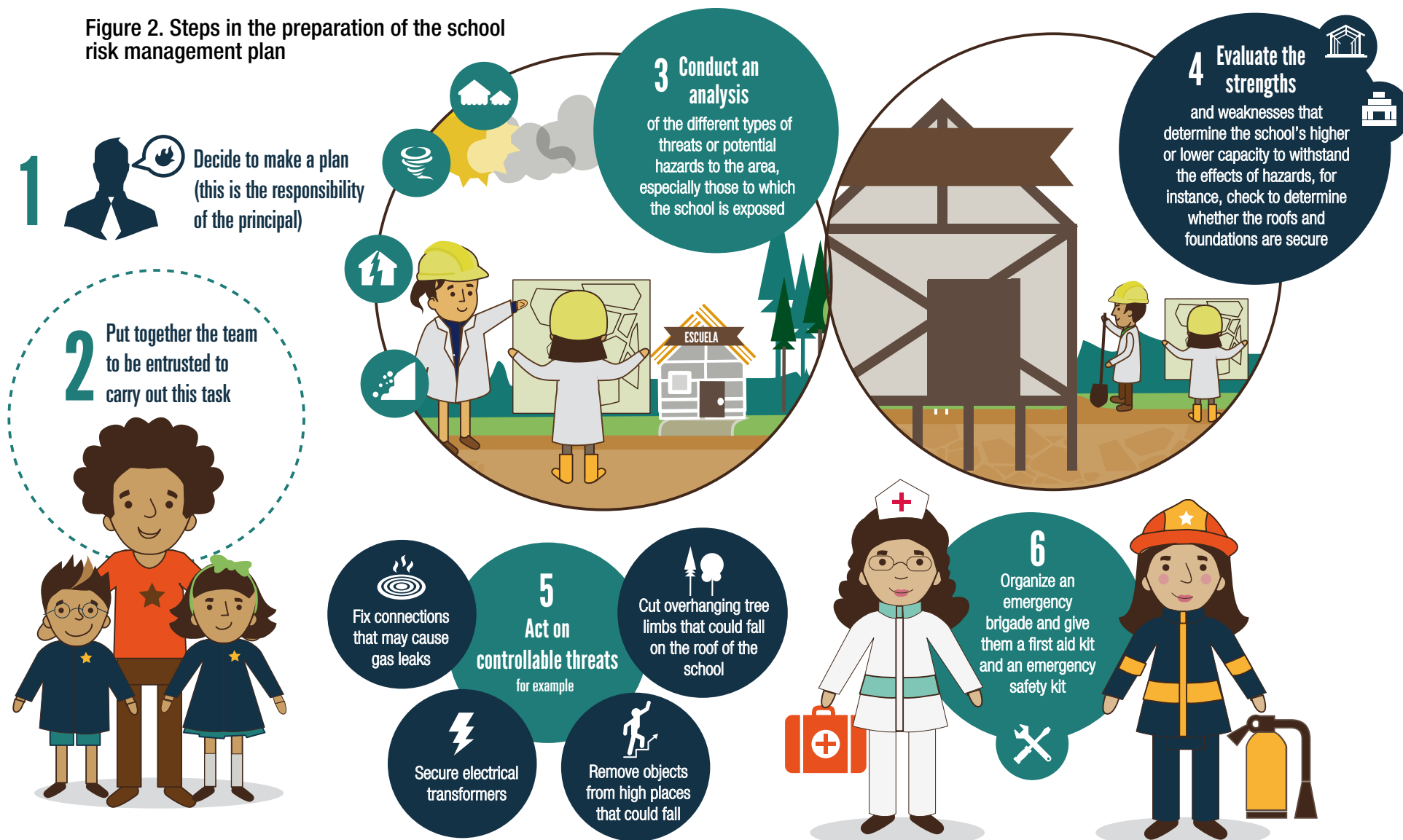
Adapting to climate change involves managing the short-, medium-, and long-term risks faced by ecosystems and the communities and institutions that are part of them.

Mitigating climate change, meanwhile, involves reducing the GHGs conducive to climate change. Anything done to lower these serves to lower risk, or at least stop it from increasing.

The main goal of adaptation is to lower vulnerability. *Adaptation* is the set of “decisions and actions aimed at strengthening the capacity of land (including ecosystems, communities, and institutions) to withstand trauma without the adverse effects of climate change so as to take advantage of those changes that are potentially favorable for a given territory.



Figure 2. Steps in the preparation of the school risk management plan



Preparing the plan

The school principal should put together a team to support him or her in devising the School Risk Management Plan. This team can be coordinated by a teacher or some other individual who is consistently at the school, is well versed on the issue (or who shows an interest in learning about it), has rallying power, and can develop the institution's credibility.

It is important that whoever coordinates the team have a substitute or alternate who can assume responsibility if, for some reason, the coordinator cannot be present, either temporarily or permanently. While any risk management project cannot depend exclusively on one or two individuals, the absence of a leader at any given time could cause the process to falter.

Thematic groups or teams can also be formed, each responsible for certain duties, such as the following:

Coordinating the School Risk Management Plan with school-greening activities. Most such activities are environmentally oriented. Put simply, a risk management plan is nothing more than a good environmental management plan.

Coordinating the plan with everyday curricular activities. This involves helping teachers understand the fundamental reasons for the plan, as well as the natural and social dynamics that create risk. Raising faculty awareness will ensure that the issue of risk management is not isolated from the remainder of school life. This kit contains a series of detailed suggestions for developing classroom lessons, many of which may be adapted for purposes of risk management.

Performing an analysis of threats and vulnerabilities, of opportunities for school and community involvement, and of ways to reduce risks or prevent them from becoming disasters. (Filling out the forms

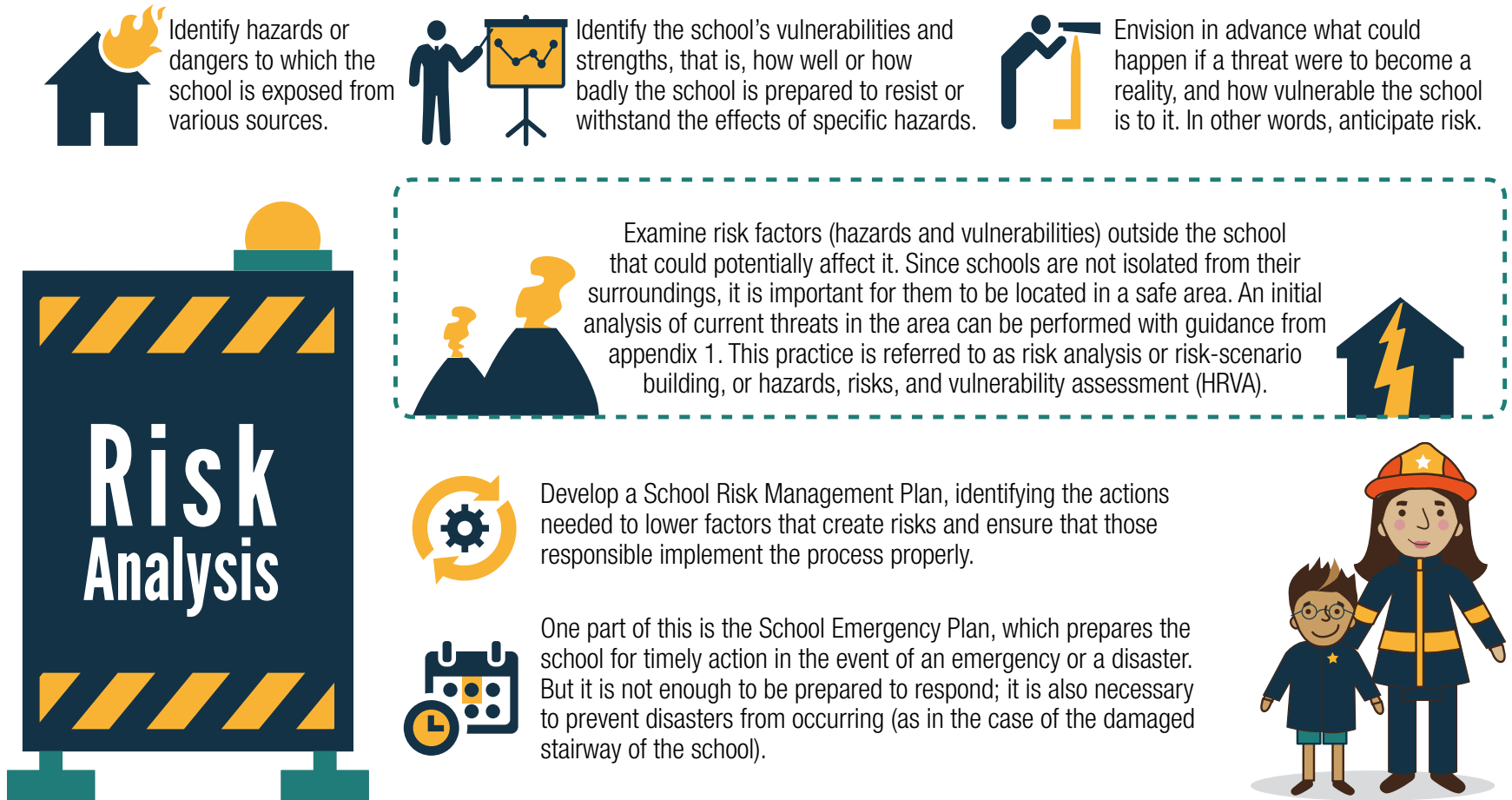
supplied in this module is a good way to start the process.) This same group will also be responsible for determining the measures to be undertaken and helping the principal manage the resources needed to carry out the plan.

Staying up to date on the training needs of the educational community in first aid, fire control, and other emergency procedures. Such activities are necessary to ensure that the plan does not end up being merely a written document, but one that can be executed both during emergencies and under normal circumstances.

Keeping a current inventory of resources needed for emergency response, such as fire-fighting equipment (extinguishers, hoses, and shovels), first aid equipment (first aid kits, stretchers, and blankets), flashlights, radios, batteries, and so on. In short, everything needed for a school emergency kit.

Once a team is formed to work with the school board to develop the School Risk Management Plan, the next step is to conduct research to determine the plan's design. The relevant research tasks are detailed in figure 4.

Figure 3. Research needed for the school risk management plan



To do this, you can refer back to tables 3 and 4 and to the appendices.

In the appendices you will find comprehensive forms to help you to identify potential hazards facing your school and to develop the School Risk Management Plan and School Emergency Plan.

What types of risk do we face?

Earlier, we were introduced to the classification of hazards based on their origin. Understanding and identifying the origin of a given hazard is important because it tells us whether or not we are able to diminish or control it.

The tables presented in this section and in the appendices can be used as checklists for identifying the hazards and dangers that affect, or could affect, your school (table 1), and the factors that determine whether your school is vulnerable or unable to withstand the effects of these hazards without trauma (tables 2a and 2b). As examples, we have selected two hazards that have to do with climate: rains (torrential or prolonged) and drought.

Table 1. A sample diagnosis of risk

Hazard	Origin	Signs	Is it preventable?	Is there a possibility that it will happen in the school or around it?	Where can we find more information?
Torrential or prolonged rains	Natural	Large quantity of rainfall in a short time period.	No.		Meteorological service Municipal government Environmental authorities Rescue agencies
Drought, forest fires	May be natural or set off by environmental mismanagement.	Shortage of water for consumption and hygienic needs. Pollution due to dust or smoke. Danger of burns, and human and economic losses.	Yes, except under extreme circumstances where no preparation is possible.		Meteorological service Municipal government Environmental authorities Sanitation and health authorities Rescue agencies

See complete threat analysis table in appendix 1.

What makes us vulnerable?

What factors weaken the school's ability to withstand the effects of hazards? What risks arise from the hazards and vulnerabilities identified? What solutions may be adopted to lower risks?

Table 2a helps identify the hypothetical reasons why a school may be vulnerable to the particular hazard of heavy or prolonged rains.



Table 2a. Identifying vulnerability to hazards: heavy rains

Threat	What makes us vulnerable?	What happens if the following converge: $H \times V = \text{Risk?}$	What can be done to lower our vulnerability?
Torrential or prolonged rains	<p>Example #1: The roofs of the school have not been properly maintained, causing many leaks ;if it hails the weight could make parts of the roof collapse.</p> <p>The drains and the gutters are not properly maintained. In some places there are none or they are partially or completely blocked, which prevent them from doing their job.</p>	<p>The spectrum of risks ranges from flooding of classrooms, the library, and offices, with loss of books and files and damages to the resources of the school, teachers, and students (which happens frequently) to the possibility of the roof caving in, posing grave danger to school's occupants if the event were to occur during classes and causing catastrophic losses regardless of when it hits.</p>	<p>Prepare a plan to support the school principal in coordinating with the municipal government (the school's property owner) to gather and allocate the resources needed to maintain the building.</p> <p>Get the media involved to raise awareness about the risks and responses being performed by the educational community; encourage the media to interview the authorities responsible.</p> <p>Pursue legal remedies to defend the fundamental rights of students and parents to life and education enshrined in the country's constitution.</p>
	<p>Example #2: The school is situated between a hillside (with a potential for landslides during very heavy rains) and a creek susceptible to flooding.</p>	<p>The school may be wholly or partially buried by a landslide or affected by a flood or both simultaneously, causing serious danger to the occupants, the school property, and the people who work and study there.</p>	<p>Manage resources with companies in the area, charities, and international organizations to supplement (not replace) the government's efforts to resolve the problem.</p> <p>Inevitably, a new school must be built in a safe place that is easily accessible to students, teachers, and the people who will work in it.</p> <p>Activities such as those described in the preceding example should be promoted so that the authorities responsible will make the decision to build a new school in a safe place.</p>

Table 2b poses similar questions, in this case related to the hazard of drought and forest fires.

Table 2b. Identifying vulnerability to hazards: drought and forest fires

Threat	What makes us vulnerable?	What happens if the following converge: $H \times V = \text{RISK?}$	What can be done to lower our vulnerability?
Drought	<p>Example #3: The school's local community doesn't have adequate reserves of water to get through the dry season and the watershed has been very poorly managed, which means that if rain doesn't fall frequently enough the water sources will dry up.</p>	<p>When the dry season is severe and prolonged, schools have to be closed by order of the health authorities.</p> <p>In the community water and food are in short supply, threatening food security.</p> <p>Often, even though schools are not closed, children must remain at home with their parents to help fetch water and firewood over long distances, thus precluding school attendance.</p> <p>There is a heightened lack of security in the region.</p> <p>Adults are forced to look for work elsewhere, making it necessary to leave the children alone or in the company of elderly people.</p>	<p>A school-led movement may demand that the authorities promote proper environmental management of the watershed, including conservation of water sources, reforestation, reservoir construction, well drilling, and proper use of groundwater.</p> <p>Construction of water tanks in the school would enable it to store water during the rainy season for responsible use in the dry season.</p> <p>Construction of cisterns or wells would help capture groundwater for the school.</p> <p>The school could lead the community in the responsible use of water, both by example and by educating community members.</p> <p>The basic materials for achieving this goal are in this kit.</p>

Forest fires	<p>Drought conditions are conducive to forest fires.</p> <p>The municipality does not have a fire department. Some members of the community voluntarily assume this task.</p>	<p>Excessive heat and smoke prevent the conditions needed to provide and receive quality education.</p> <p>More vegetation is lost, wildlife and domesticated animals die.</p> <p>Human life is endangered. When fires get out of control, populated areas, including schools, are threatened.</p>	<p>Environmentally sound watershed management lowers the risk of forest fires.</p> <p>A school-led educational campaign could cut down the causes of fires, which most often involve pyromaniacs or carelessness (poorly handled campfires, tossing of jars and bottles that focus sunlight and ignite flammable materials, irresponsible discarding of cigarette butts or handling of flammable substances, and so on).</p> <p>With the support of the media, the campaign could be broadcast throughout the community, encouraging the relevant authorities to support the effort.</p> <p>The community could support the local authorities to negotiate with the national government to provide the municipality with a fire department and/or support volunteer organizations with the necessary resources.</p>
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See the full vulnerability analysis table in appendix 2.



What can be done to reduce vulnerability?

Table 3 helps to pinpoint actions to mitigate risk factors and identify the individuals who can help. Table 4 identifies the resources needed to carry out the solutions identified for each problem: What resources does the school possess? What needs to be obtained with the help of other actors?



Table 3. Assigning responsibility for solutions

Hazards identified	Vulnerabilities identified	Identified solutions	Who is responsible for applying the solution?	School and community partners in the application of solutions

Inventory of resources and needs

To help put into practice the solutions that you identified in table 3, table 4 helps you inventory the resources you have available and any additional resources you may need. In the last column you can also list your strategies to secure the resources you lack.

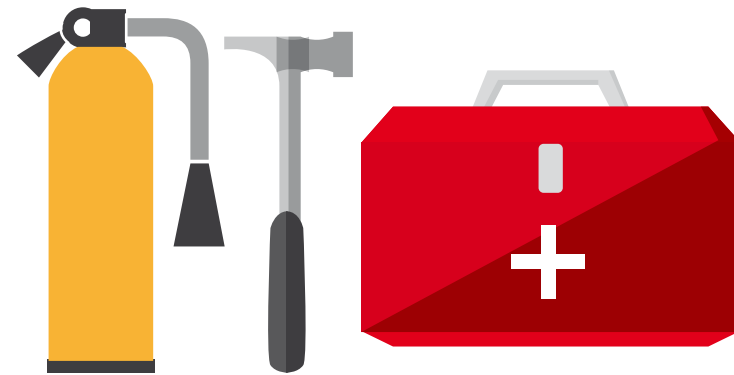


Table 4. Inventory of resources and needs

Solutions identified (Copy the corresponding column from the previous table)	Who is responsible for applying the solution? (Copy the corresponding column from the previous table)	What can we do within the school? (Copy the column about Identified solutions from the previous table)	What resources do we have available? (Physical and economic resources, expertise, management capacity, resources for complaints, and influence)	What are we missing and what can we do to get what we need? (Strategies to obtain the necessary resources)

Example of an action plan to address a building's structural weakness

Using tables 5 and 6, identify the *goals* that you wish to reach, the *activities* needed to move the process forward, the people *responsible* for each of these activities, the *time* anticipated to carry them out, and the success *indicators* by which you can verify whether it was possible or not to reach the desired goals. The example presents an

action plan to strengthen the physical structure of a school building so that it will better withstand the effects of heavy rain.

The tables that follow offer examples of how the empty tables and formats could be filled out.

Table 5. Action plan: Example 1—structural reinforcement of the school building

Goal	Activity	Responsible individuals	Time	Success indicator
Reinforcement of the building's structure so that it can withstand heavy, prolonged rains, including thunderstorms and hail	1. Raising awareness in the educational community about the importance of reaching this goal: <ul style="list-style-type: none"> • Compiling reports of disasters unleashed in the past by the cause indicated (eyewitness accounts, newspaper clippings, photos). • Keeping a photographic and documentary record. • Addressing the issue at meetings with parents. • Distributing circulars and flyers. • Holding conferences. • Presenting plays. 	Team responsible for the Risk Management Plan, chaired by the school principal and including faculty and students.	Months 1–3	The various parts of the school community become aware of the need and the right of the school to have a building capable of withstanding the effects of the threats identified. Publishing of # flyers and sending of # circulars. Holding # conferences. Preparing and presenting stage plays.
	2. Petitions are sent to the responsible authorities.	Responsible team with the active support of the entire school community.	Months 4–6	

Table 5. Action plan: Example 1—structural reinforcement of the school building, continued

	4. Forums are held that are open to local authorities, educational authorities, the media, and so on.	Responsible team with the active support of the entire school community.	Months 4–6	# forums have been held from which specific conclusions are drawn and disseminated in the community.
	5. Scientific and legal arguments are raised that support the proposed solutions.	Responsible team with the active support of the entire school community.	Months 4–6	You have a solid argument to support the proposal at the municipal, departmental, and national level.
	6. Authorities are encouraged to allocate necessary resources within a specific time frame and to find contractors for the needed designs and projects.	Responsible team with the active support of the entire school community.	Months 7–10	Written commitments are obtained from the appropriate authorities. Necessary resources are allocated in appropriate budgets.
	7. Necessary projects are carried out.	Responsible authorities.	Months 11–14	The school has a suitable building.

Table 6. Action plan: Example 2—solving a problem arising from clogged drains, downspouts, and bodies of water

Goal	Activity	Responsible individual	Time	Success indicator
Prepare the school's drainage system to cope with the upcoming rainy season	<p>1. Raising the awareness of the school community regarding the importance of achieving this goal through:</p> <ul style="list-style-type: none"> • Addressing the issue at meetings with parents. • Distributing circulars and flyers. • Holding conferences. • Presenting plays. 	Team responsible for the Risk Management Plan, chaired by the school principal and including faculty and students.	Weeks 1–2	<p>The problem is on the agenda of meetings of the various stakeholders in the school community. The issue is discussed effectively.</p> <p>Included in the minutes of each meeting.</p>
	<p>2. Organizing brigades comprised of teachers, parents, students, and school workers to carry out activities involving garbage and debris collection and cleaning bodies of water:</p> <ul style="list-style-type: none"> • Planning activities. • Food and recreation committees to encourage workshops. • Consulting from relief organizations (Red Cross, civil defense, firefighters) to ensure safety for the workshops. • Gaining the support of the mayor's workers and teams. 	<p>Team responsible for the Risk Management Plan chaired by the school principal and involving faculty and students.</p> <p>Relief organizations.</p> <p>Mayor's office.</p>	Week 3	<p>The brigades are organized and perform their respective activities.</p> <p># of brigades and participants in each.</p> <p>Reports on activities.</p>
	<p>4. Activities or works that must be performed by qualified personnel are identified:</p> <ul style="list-style-type: none"> • Professional consulting. • Resource management (in the school budget, and in the municipal, departmental, or national budget). • Fundraising activities (bazaars, raffles, festivals, and so on). • Management of support and donations (in the form of money, materials, technical assistance). 	<p>Team responsible for the Risk Management Plan, chaired by the school principal and involving faculty and students.</p> <p>Academic and/or professional institutions.</p> <p>Relief organizations.</p> <p>Mayor's office.</p>	Weeks 1–4	<p>Specialized staff advise the school board regarding the resolution of specific problems.</p> <p>Reports.</p>
	5. Implementation of scheduled activities.	Teams formed for each activity.	Weeks 5–6	The school's drainage systems are prepared to withstand a severe rainy season.

The school emergency plan

At this point, the principal objective of the School Risk Management Plan should be clear: to understand the factors that generate risk, with the objective of intervening to reduce them and preventing them from turning into disasters.

But because it is not always possible to prevent an emergency or disaster, the school community must be prepared to act quickly and appropriately to reduce human and material loss and ensure a quick recovery.

Just as the School Risk Management Plan needs one person to coordinate it, the School Emergency Plan requires a leader to execute the plan, preferably someone with relevant training from the Red Cross, civil defense, the fire department, or some organization of that nature.

The two plans should not be organized separately. Rather, the emergency plan should be based on the information gathered and strategies devised in the course of drafting and implementing the School Risk Management Plan. Preparing to respond to an emergency is an important component of risk reduction.

The literature on risk reduction¹ recommends that the School Emergency Plan take the following aspects into consideration.

¹ Among other sources, *Safe Schools in Safe Territories*, published by International Strategy for Disaster Reduction, ISDR-UNICEF, <http://eird.org/publicaciones/safe-schools.pdf>.

Alarm system:

- Inform the community about alerts and alarms warning of an imminent phenomenon capable of triggering a disaster, the meaning of each alarm, and how to react to it.
- Communicate the primary and alternative means for transmitting these alarms (for example, an electric siren may not work in the event of a power outage, in which case you will need to resort to a bell or some similar device).
- Define who is authorized to activate the alarms.

Preparing for an immediate response:

- Inform the community about how to react in the case of a phenomenon capable of setting off a disaster (for example, what to do if an earthquake occurs during school hours).
- Organize teams to take responsibility for fire control, providing first aid, and so on.
- Identify those in charge of contacting the media and providing authoritative information on the status of the educational center (this includes what to say, when, how, and to whom).
- Identify the individuals responsible for coordinating the response to an emergency on different days of the week and at different hours of the day or night.
- Define the individuals who should be responsible to look after people with special needs (infants, the elderly, the disabled) and the appropriate procedures.

- Define individuals who should engage in the protection of wild and domesticated animals in conditions of risk.

Advance planning on:

- Measures that should be taken to guarantee the safety of the persons, facilities, and properties of the educational center and those responsible for security, taking into account the characteristics of each population group. One such measure is the creation of a School Emergency Kit (figure 4).
- Measures that should be taken to ensure the safety of wild and domesticated animals.
- Alternative measures and contingency plans.
- Measures to guarantee the security of the academic and administrative files of the educational center. There should be distinct sites, including the Internet and back-up versions, that are updated at least monthly.
- Reasons to justify an evacuation, how to conduct an evacuation, alternative routes, and meeting points.
- Safest places in the building (for each type of emergency) and orderly ways of accessing and occupying those sites, the capacity of each site, and alternative sites.
- Complete roster of the school community (directors, teachers, students, employees, and administrative and supporting personnel) including age, blood type, and any special needs (for example, any requirements or restrictions on certain types of medications); address and telephone number of each individual's families; emergency contacts; and so on. Particularly vulnerable groups or those with specific needs (small children, disabled) should be identified. There should be numerous copies of this roster

(both in print and electronically) that are accessible in case of a disaster.

- Places where parents should meet their children in case of a disaster (decisions to made jointly with parents).
- Method or methods of obtaining information regarding the educational center in case of a disaster (assuming problems such as congestion or interruption of the phone lines, difficulties in accessing the school due to blocked roadways, and so on). The plan may consider communication with one or several radio stations as one of the primary tasks to get information out to parents on the status of the buildings and their occupants (decisions to made jointly with parents).
- Places for administering first aid, assisting and sorting the injured, and so on.
- Procedure for handling fatalities.

It is also necessary to conduct periodic drills to familiarize the school community with the plan, and thus prevent the plan from becoming outdated or discontinued.

Figure 4. Components of a school emergency kit

Food



- Ready-to-eat canned meats, fruits, vegetables and a can opener
- Vitamins
- Protein or fruit bars, or dried fruit
- Food for infants
- Dry cereal or granola
- A 3-day supply of drinking water (1 gallon per person per day)
- High-energy foods
- Peanut butter, nuts and crackers

Health and safety



- First aid supplies
- Whistle to signal for help
- Extra eyeglasses or contact lens solution
- Prescription medications
- Cell phone with chargers, inverter or solar charger

Paperwork



- Copies of your credit card and driver's license
- A map of your area
- Cash
- Important documents, including your insurance policies
- A list of area hotels

Shelter and tools



- Work gloves
- Dust mask to help filter contaminated air, plastic sheeting and duct tape
- Matches in a waterproof container and candles
- Extra car and house keys
- Dry clothing and blankets
- Baby items, such as bottles and diapers
- Flashlights or portable lanterns and extra batteries
- Sanitation supplies, such as toilet paper, moist towelettes, soap, garbage bags and disinfectant

Entertainment and news



- Family games and crafts
- Books, magazines
- A crank- or battery-powered radio

Appendix 1. What kinds of hazards affect us? Analyzing threats

Hazard	Origin	Signs	Is it preventable?	Is there a possibility that it will happen in the school or around it?	Where can we find more information?
Earthquake	Natural	Movement in the ground.	No		Geological service, municipal government, environmental authorities, rescue agencies.
Tidal wave or tsunami	Natural	Movement in the ground, rising of the sea.	No		Geological service, municipal government, environmental authorities, coastal authorities / maritime rescue agencies.
Volcanic eruption	Natural	Falling rocks or ash, mudslides, lightning.	No		Geological service, municipal government, environmental authorities, rescue agencies.
Hurricane	Natural	Strong winds, suction (winds that pull or “suck”).	No		Meteorological service, municipal government, environmental authorities, coastal authorities/ maritime rescue agencies.
Gale, tornado	Natural	Strong winds, suction.	No		Geological service, municipal government, environmental authorities, rescue agencies.
Electrical storm	Natural	Lightning.	No		Meteorological service, municipal government, environmental authorities, rescue agencies.

Appendix 1. What kinds of hazards affect us? Analyzing threats, continued

Torrential or prolonged rains	Natural	Large quantity of rainfall in a short time period.	No		Meteorological service, municipal government, environmental authorities, rescue agencies.
Drought, forest fires	May be natural or set off by environmental mismanagement.	<p>Shortage of water for consumption and hygienic needs.</p> <p>Pollution due to dust or smoke.</p> <p>Danger of burns, and human and economic losses.</p>	Yes, except under extreme circumstances in which no preparation is possible.		Meteorological service, municipal government, environmental authorities, sanitation and health authorities, rescue agencies.
Water shortage	Possibly due to a shortage or excess of rainfall or infrastructure failures.	<p>Shortage of water for consumption and hygienic needs in the school.</p> <p>Need to suspend classes.</p> <p>Negative impact on the right to education.</p>			Meteorological service, municipal government, environmental authorities, sanitation and health authorities, rescue agencies.
High tides (flooding)	Natural	Rising of the sea onto land.	In some cases can be reduced with break-waters and barriers, levees.		Meteorological service, municipal government, environmental authorities, coastal authorities / maritime rescue agencies.

Appendix 1. What kinds of hazards affect us? Analyzing threats, continued

Landslide	May be natural or socionatural (caused by human activity).	Movement of mass. Sliding earth, mud, rocks, and branches.	The hazard may be reduced through proper management of grounds soils, slopes and waters, and sometimes with walls; watershed management.	Geological service, meteorological service, municipal government, environmental authorities, road authorities, rescue agencies, community.
Flooding	May be natural or socionatural (caused by human activity).		The hazard may be reduced through proper management of grounds and waters, watershed management, and dredging bodies of water. Other options may include dikes, levees, and walls.	Meteorological service, municipal government, environmental authorities, rescue agencies, community.
Industrial accident	Anthropogenic	Explosion, leaking of dangerous gases and substances.	Yes	Municipal government, the affected business, rescue agencies, community.
Traffic accident	Anthropogenic	Obstruction of the roads.	Yes	Municipal government, police, transit authorities, rescue agencies, community.

Appendix 1. What kinds of hazards affect us? Analyzing threats, continued

Illicit drug sales and consumption	Anthropogenic	Constitute a hazard to life, health, and integrity.	Yes		Municipal government, police, rescue agencies, community.
Delinquency					
Armed violence	Anthropogenic	Shootings, landmines, obstruction of free movement.	In theory yes, but in practice very difficult.		Municipal government, police, rescue agencies, community.
Other hazards					

Appendix 2. What factors make the school vulnerable to hazards?

Analyzing risk factors and formulating responses

Hazard	What makes us vulnerable?	What happens when they combine? $H \times V = \text{Risk}$	What can we do?
Earthquake	<p>The school does not have an earthquake-resistant structure.</p> <p>The school does not have proper maintenance.</p>	<p>The school collapses, or does not collapse but becomes unusable.</p> <p>Loss of life, injuries.</p> <p>Loss of property (equipment, furniture, files).</p> <p>Compromise of the right to education.</p>	<p>Demand that the building's structures be reinforced in accordance with the code of earthquake resistant buildings in your area.</p> <p>If the school is located atop or near an active geological fault or is close to a slope that could collapse, the school should be transferred unless the soil can be stabilized.</p> <p>The school community should push for the necessary resources for the school's maintenance.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
Tidal wave or tsunami	<p>The school is located close to the ocean.</p>	<p>The school is destroyed by the ocean or affected by flooding.</p>	<p>The school should be relocated to a site sufficiently far from the ocean.</p> <p>The community, including the school, should have an early alert system that tells the community when there is the possibility of a tsunami.</p>

Appendix 2. What factors make the school vulnerable to hazards? Analyzing risk factors and formulating responses, continued

Volcanic eruption	<p>The school is located in a zone at risk of falling rocks or ash or that may be reached by flowing mud.</p> <p>The school's roof is not resistant to the falling ash.</p> <p>The drainpipes and canals may become obstructed.</p>	<p>The school may be leveled or destroyed.</p> <p>The school's roof may collapse from the weight of the ashes.</p> <p>Human losses; injuries; loss of infrastructure, equipment, and documents.</p> <p>Compromise of the right to education.</p>	<p>The school should be relocated to a site sufficiently far from the reach of mudslides.</p> <p>If the hazard involves only ash falling on the roof, the school's roof should be reinforced.</p> <p>The drainpipes and canals should be kept clean before and after the ash falls.</p> <p>An early alert system should be in place to announce the danger of a volcanic eruption.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
Hurricane	<p>The school's structure is not resistant to strong winds.</p>	<p>The roof could collapse or be "sucked up" by the low pressures generated by the winds. Without a roof, the school is left exposed to the high volumes of water.</p> <p>Human and material losses.</p>	<p>The roof and, more generally, the school's structures should be reinforced to resist the effects of this particular hazard.</p> <p>If the school is located at the bottom of a hillside, near a ravine, or very close to a river or the ocean, it should be relocated to a safer area.</p> <p>Secure shelters should be established in or near the school.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>

Appendix 2. What factors make the school vulnerable to hazards? Analyzing risk factors and formulating responses, continued

Gale, tornado	<p>The school's structure is not resistant to strong winds.</p>	<p>The roof could collapse or be “sucked up” by the low pressures generated by the winds. Without a roof, the school is left exposed to water damage.</p> <p>Human and material losses.</p>	<p>The roof and, more generally, the school's structures should be reinforced to resist the effects of this particular hazard.</p> <p>If the school is located at the bottom of a hillside, near a ravine, or very close to a river or the ocean, it should be relocated to a safer area.</p> <p>Secure shelters should be established in or near the school.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
Electrical storm	<p>The school lacks protection against lightning.</p>	<p>One or more electrical shocks could affect the school and its occupants.</p> <p>Human and material losses.</p>	<p>Install lightning conductors and security systems for the electric circuits.</p> <p>Remove trees that could damage the school.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
Torrential or prolonged rains	<p>The ceilings, floors, and structures in general are inadequately designed to receive and remove heavy rainwater.</p> <p>The grounds where the school is located are floodable.</p> <p>The school is located below the necessary level to avoid flooding due to the overflowing of a nearby river or canal.</p> <p>The drainage system for storm water is insufficient or in poor condition.</p>	<p>The school is flooded.</p> <p>Human and material losses.</p>	<p>Renovate the ceilings, floors, and structures in general to absorb excessive volumes of water in the winter season.</p> <p>Carry out adequate maintenance of the drainpipes and canals. Keep them free of trash and debris.</p> <p>Arrange the necessary works on the surrounding lands.</p> <p>If the school is in a location facing immitigable risk (risk that cannot be reduced), it is necessary to relocate it to a safer place.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>

Appendix 2. What factors make the school vulnerable to hazards? Analyzing risk factors and formulating responses, continued

Drought, forest fires	The school lacks alternative sources of water or systems for storing water reserves.	Sanitary problems, contamination, health problems, human and material losses.	<p>Environmental protection strategies.</p> <p>Water storage systems.</p> <p>Identification of alternative sources.</p> <p>Responsible water management.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
Water shortage	The school lacks alternative sources of water or systems for storing water reserves.	Sanitary problems, contamination, health problems, human and material losses.	<p>Environmental protection strategies.</p> <p>Water storage systems.</p> <p>Identification of alternative sources.</p> <p>Responsible water management.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
High tides (flooding)	The school is located too close to the ocean.	<p>Flooding.</p> <p>Human and material losses.</p>	<p>Protect the school with walls or dikes.</p> <p>Relocate the school.</p> <p>Early alert system.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>

Appendix 2. What factors make the school vulnerable to hazards? Analyzing risk factors and formulating responses, continued

Landslide	<p>The school is located in a danger zone below or above active or potential landslides.</p>	<p>Human and material losses.</p> <p>Compromises of the right to life, to health, and to education.</p>	<p>Environmental management of the hillsides (reforestation, water management).</p> <p>Infrastructure works.</p> <p>Early alert system.</p> <p>Relocation of the school to a safer area.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>
Flooding	<p>The school is located in a hazard zone.</p>	<p>Human and material losses.</p> <p>Compromises of the right to life, to health, and to education.</p>	<p>Environmental management of the basin (reforestation, water management, cleaning, and dredging of the riverbeds).</p> <p>Infrastructure works.</p> <p>Early alert system.</p> <p>Relocation of the school to a safer area.</p> <p>Risk Management Plan.</p> <p>School Emergency Plan.</p>

Appendix 2. What factors make the school vulnerable to hazards? Analyzing risk factors and formulating responses, continued

Anthropogenic hazards	Vulnerability	Risk	What can be done
Industrial accident	The school is located in a hazard zone, near factories or warehouse of dangerous substances.	Human and material losses. Compromises of the right to life, to health, and to education.	Be sure that the neighboring businesses and stores have effective plans for industrial safety and risk reduction. Coordinate with the local authorities (municipal government, educational authorities, emergency committees). Risk Management Plan. School Emergency Plan.
Traffic accident	The school is located in an area of intense traffic and high rate of accidents.	Accidents that affect the school community.	Coordinate with the authorities. Risk Reduction Plan. School Emergency Plan.
Illicit drug sales and consumption Delinquency	The school is located in a hazard zone.	Damages to life, health, and the integrity of property in school community. Compromises of the right to life, to health, and to education.	Coordinate with the authorities. Preventative efforts. Early alert system. Risk Management Plan. School Emergency Plan.

Appendix 2. What factors make the school vulnerable to hazards? Analyzing risk factors and formulating responses, continued

Armed violence	The school is located in a hazard zone.	Damages to life, health, and the integrity of property in school community. Compromises of the right to life, to health, and to education.	Coordinate with the authorities. Prevention efforts. Early warning system. Risk Management Plan. School Emergency Plan.
Other hazards			

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Module 9

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