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Educational, Scientific and
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UNIVERSITY OF UDINE
SAFETY AND PROTECTION INTERSECTORAL LABORATORY
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United Nations
Educational, Scientific and
Cultural Organization

UNESCO Chair on Intersectoral Safety
for Disaster Risk Reduction and Resilience
SPRINT-Lab, University of Udine, Italy

VISUS Methodology Webinar

TORRES Jair
GRIMAZ Stefano
MALISAN Petra

9th March 2020

Global Alliance for
Disaster Risk Reduction & Resilience
in the Education Sector

OUTLINE

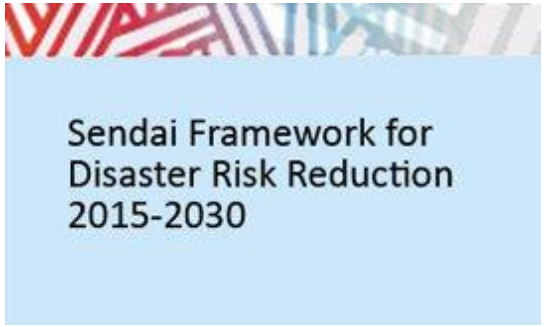
1. **Introduction**
   Jair Torres
2. **Learn about VISUS - why how what**
   Stefano Grimaz
3. **How VISUS works**
   Petra Malisan
4. **Overview of worldwide VISUS pilot projects**
   Jair Torres

1

Introduction

School safety in the 2030 Agenda

- **Sustainable development goals**
  - **SDG 4**
  - **SDG 11**



- **DRR Sendai framework**
  - Strategic infrastructures
  - Schools

- **Paris Climate Agreement**
  - Art. 7, 8, 11

Working together

Global Alliance for Disaster Risk Reduction & Resilience in the Education Sector

United Nations Educational, Scientific and Cultural Organization

unicef

UNDRR
UN Office for Disaster Risk Reduction

GFDRR
Global Facility for Disaster Reduction and Recovery

Save the Children

United Nations Educational, Scientific and Cultural Organization

International Institute for Educational Planning

Inter-agency Network for Education in Emergencies

PLAN INTERNATIONAL

RET

risk RED
risk reduction education for disasters

World Vision

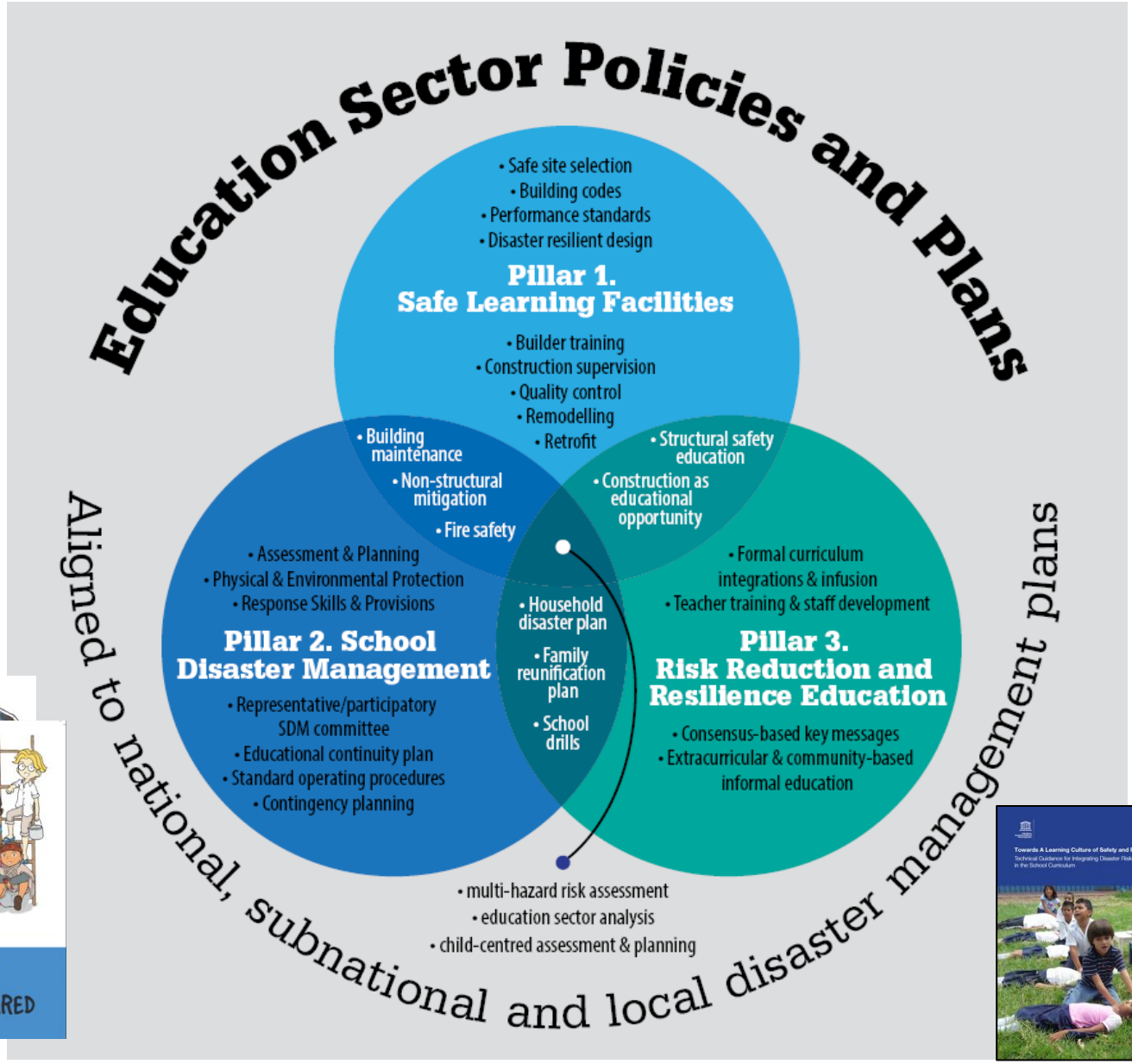
IsraAID

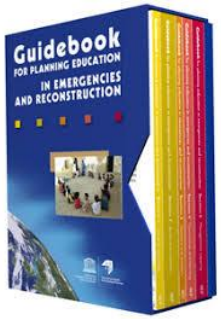
ARUP

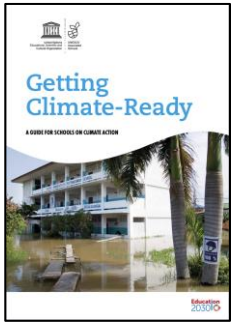
Worldwide Initiative for Safe Schools

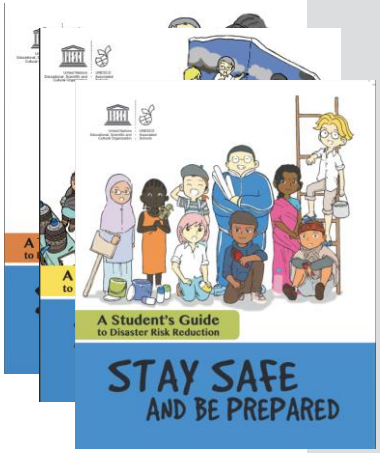
Global commitment to school safety

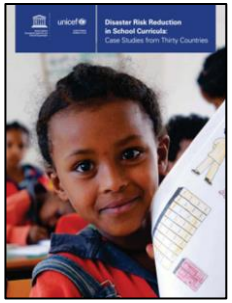
Comprehensive School Safety (CSS)



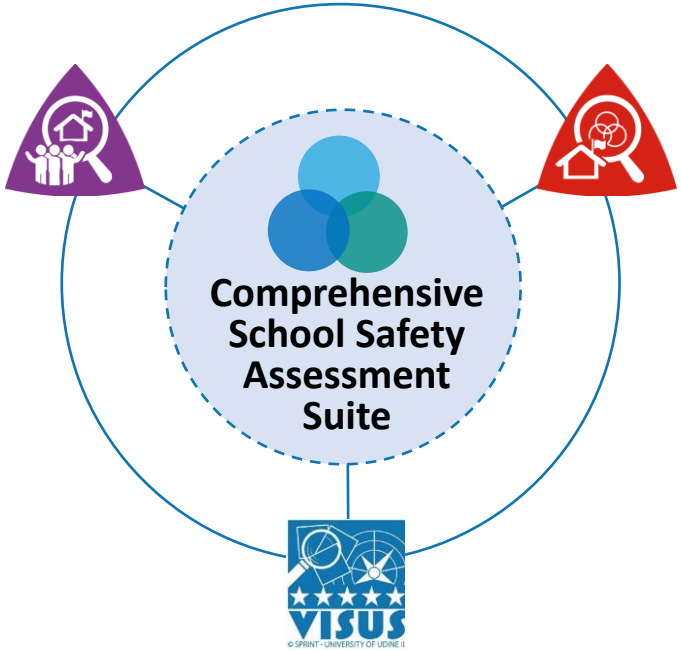






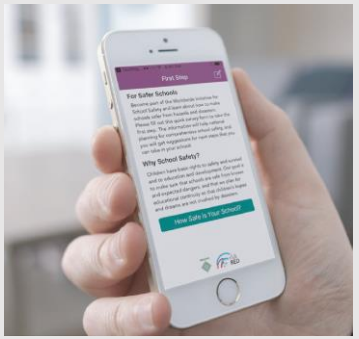


CSS assessment suite



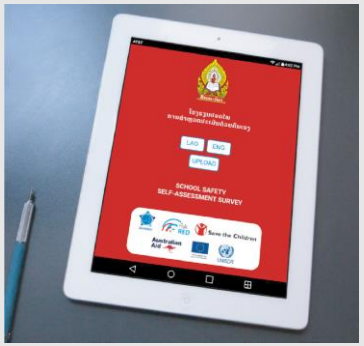
CSS First Step

Community Awareness



CSS School Self-Assessment

Internal Assessment
(Pillars 1, 2,3 quick survey)



VISUS CSS

Visual Inspection
for defining Safety
Upgrading Strategies

CSS assessment suite

TOOL	INPUTS	FROM	OUTPUTS	TO
1. CSS First Step: Community Awareness	Hazard/Risk maps Desk review of available data Crowd-sourced & other views	Public records Students Community members	Crowd-sourced perception data: E-mail to responder Online visualisation	School community Local education administrators Advocacy Awareness Interest Salience
2. CSS School Self-Assessment: Internal Assessment (Pillars 1, 2,3)	Pillars 1, 2, 3 quick survey Photographic reportage EMIS & geo-informatics	School safety committees Visiting education administrators	School-based self-assessment School report District report Online visualisation Searchable database	School management National & district education administrators Local input Program development Capacity-building Flagging for technical Pillar 1 inspection
3. VISUS CSS: Visual Inspection for defining Safety Upgrading Strategies (Pillar 1)	Visual inspection/ detailed data Application of criteria Quantitative and qualitative analysis Photographic reportage EMIS & geo-information	External trained survey teams: Technical inspectors from Ministry of Education Surveyors from local Universities or vocational schools	Capacities for technical assessment created in the country Individual school report Collective report (including budget estimations) Online visualisation Searchable database	School management National & district education administrators Characterisation Recommendations Cost-estimate – funding allocation Prioritisation
4. Detailed investigation and design	Deep technical investigation Quantitative analysis	Trained structural engineers	Detailed investigation and design	In-depth assessment for design and delivery of retrofit or replacement

risk RED
risk reduction education for disasters

Save the Children

United Nations Educational, Scientific and Cultural Organization

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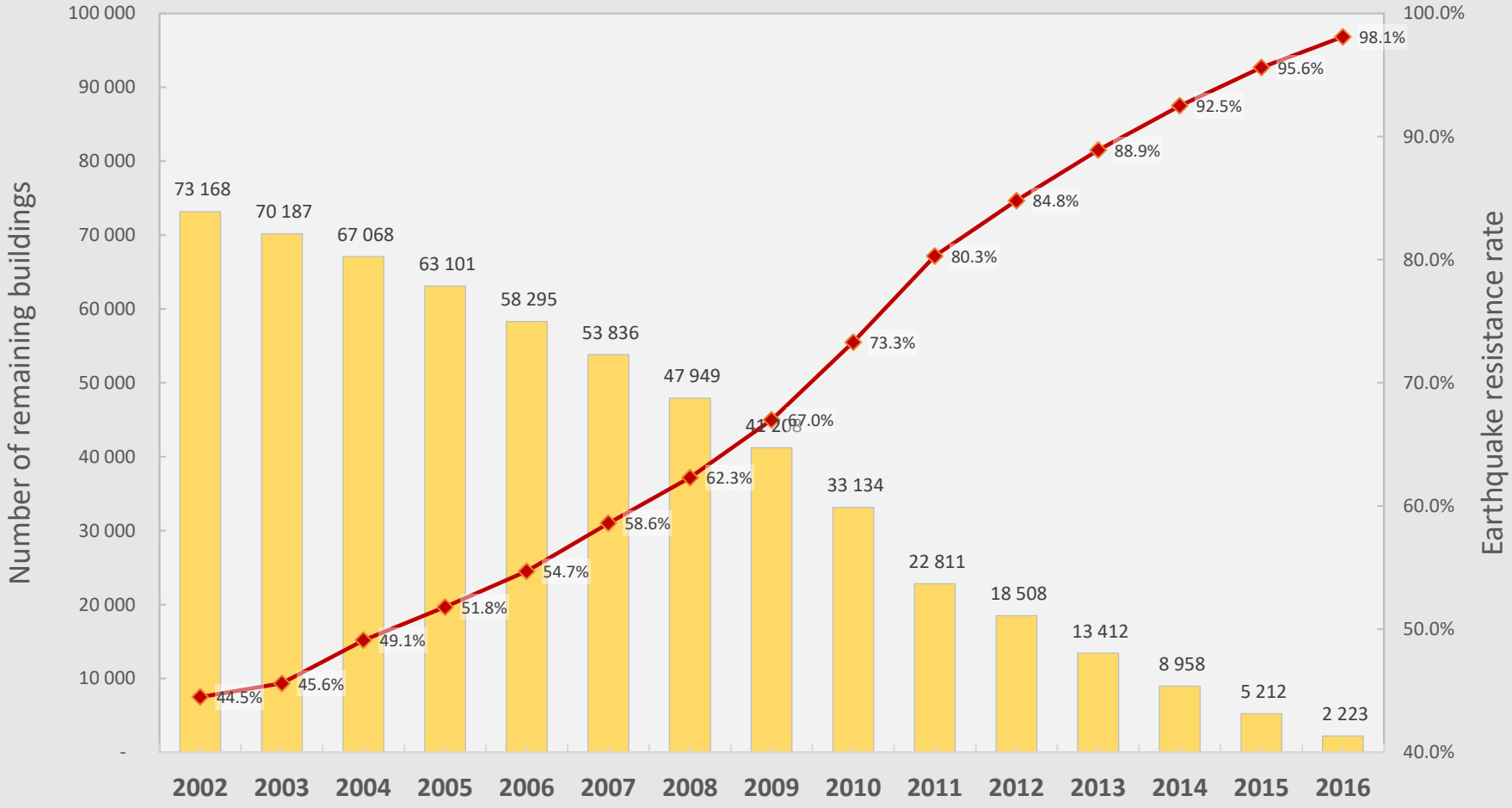
ARUP

Assessing schools in Japan



Haiti case study

Before 2010 Earthquake

- Development investments without DRR perspective

2010 Earthquake

- From now on investments on school infrastructure focused on seismic resistance
- International aid not harmonized

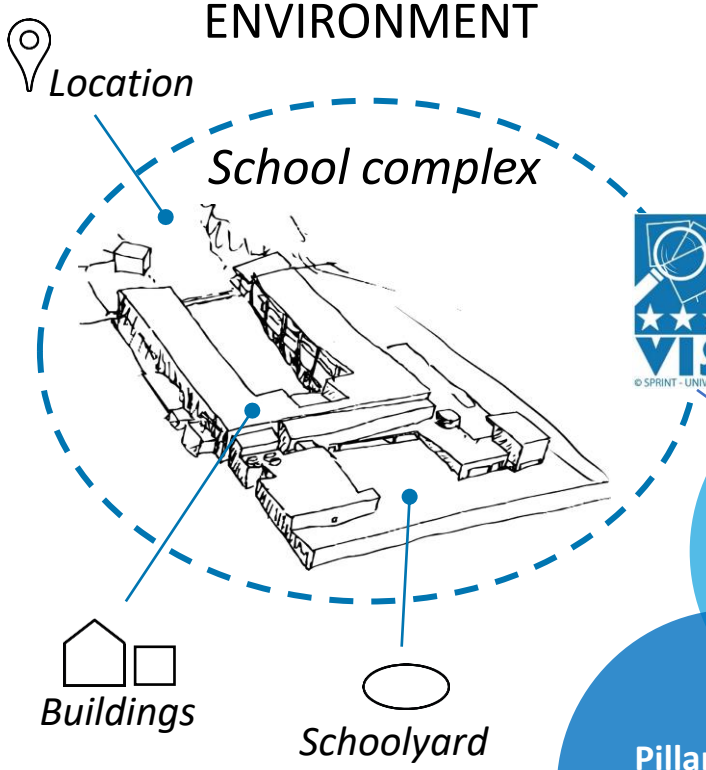
2016 Hurricane Matthew

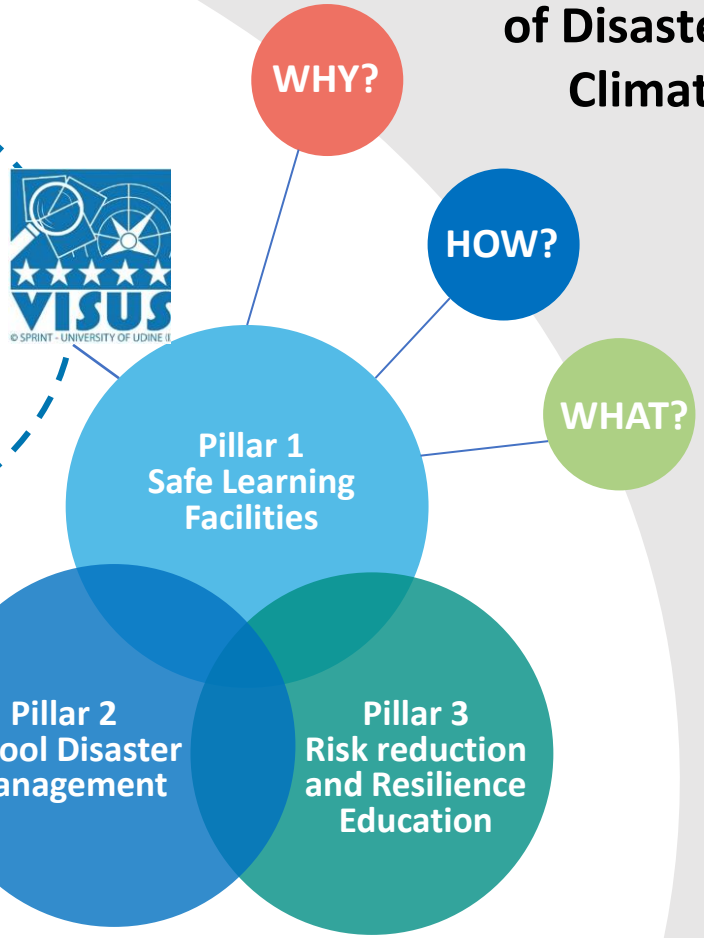
- 50% of the new “seismic” resistant schools damaged

Lessons Learnt

- Need to provide policy makers with decision-making information concerning school facilities: inventory, location, exposure, physical vulnerabilities, etc.
- Need to approach the challenge in a multi-hazard perspective.
- Countries with low capacities (financial, human resources, etc) urge to potentialize their existing limited capacities.

Pillar 1: UNESCO Guidelines





Comprehensive School Safety framework

UNESCO Guidelines for Assessing Learning Facilities in the Context of Disaster Risk Reduction and Climate Change Adaptation

LIFE SAFETY
(CHILDREN)

CONTINUITY
(EDUCATION ACTIVITIES)

LOSS PREVENTION
(SAFEGUARD OF INVESTMENTS)

Global Alliance for Disaster Risk Reduction & Resilience in the Education Sector

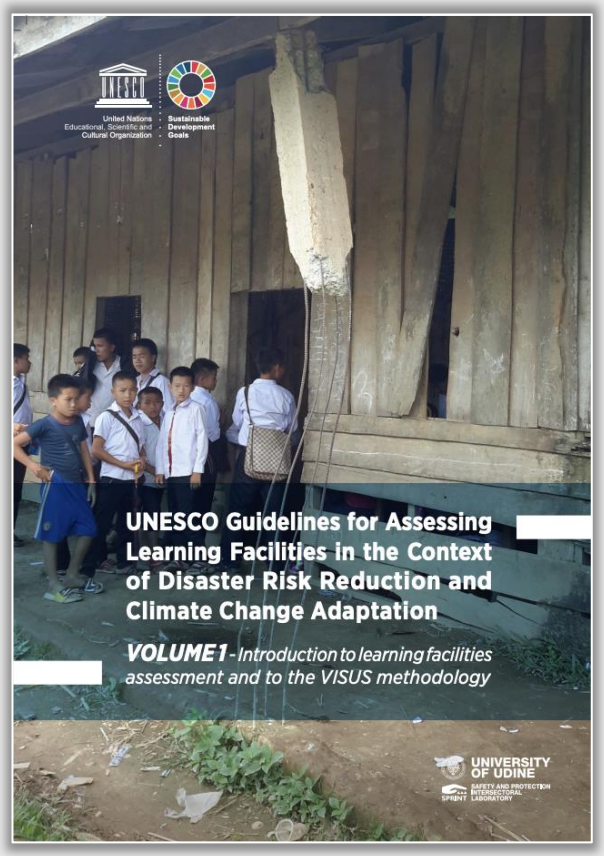
When the number of schools is large…
DECISION-MAKERS CONCERNS:

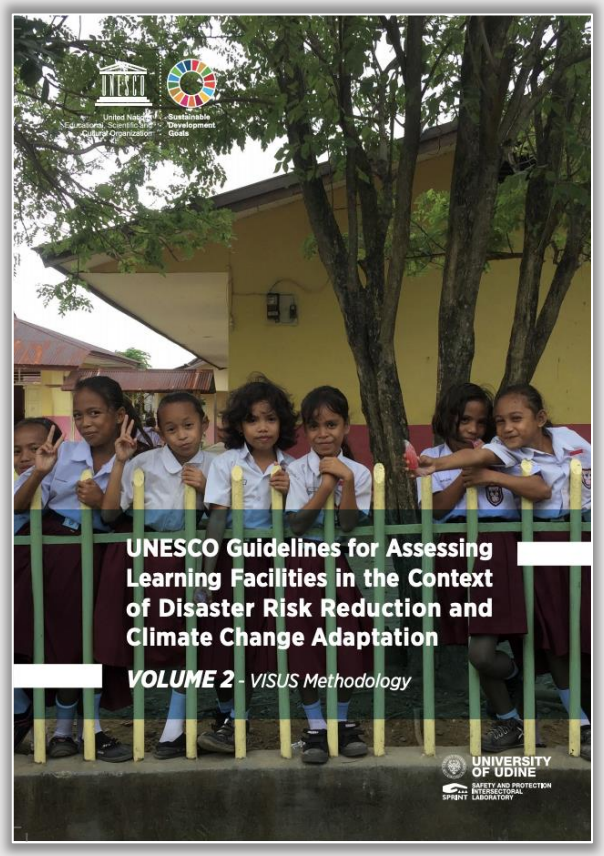
WHY?

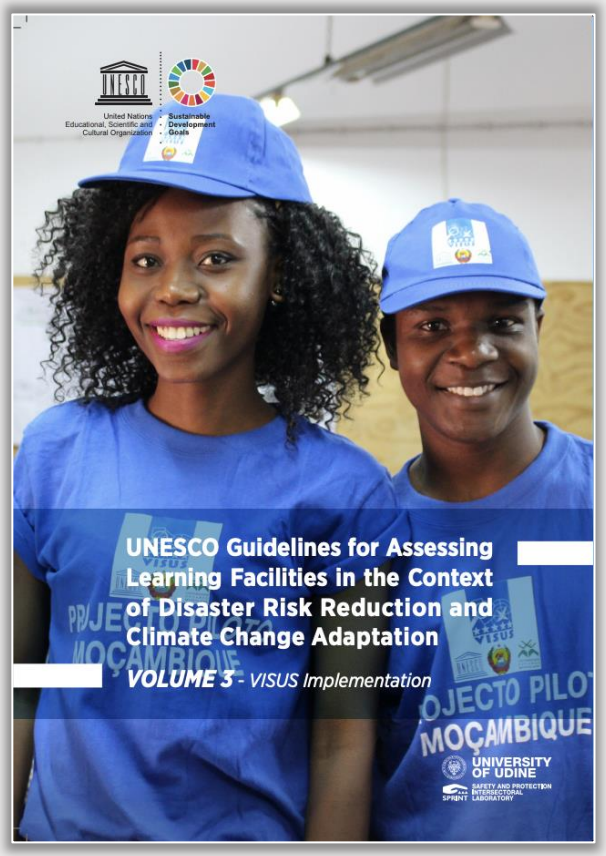
DECISION-MAKERS

- what is the **SAFETY SITUATION** of each learning facilities?
- **WHICH** schools need **PRIORITY INTERVENTIONS** and **WHY**?
- what types of **INTERVENTIONS** are needed?
- how much would the interventions **COST**?
- how can the level of risk be **COMMUNICATED** to the educational community?
- how to define an effective safety upgrading **ACTION PLAN** for a **large number of schools**?

UNESCO Guidelines for Assessing Learning Facilities in the Context of Disaster Risk Reduction and Climate Change Adaptation







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Sustainable Development Goals

Grimaz S., Malisan P., Torres J., Anglès L.

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2

Learn about VISUS

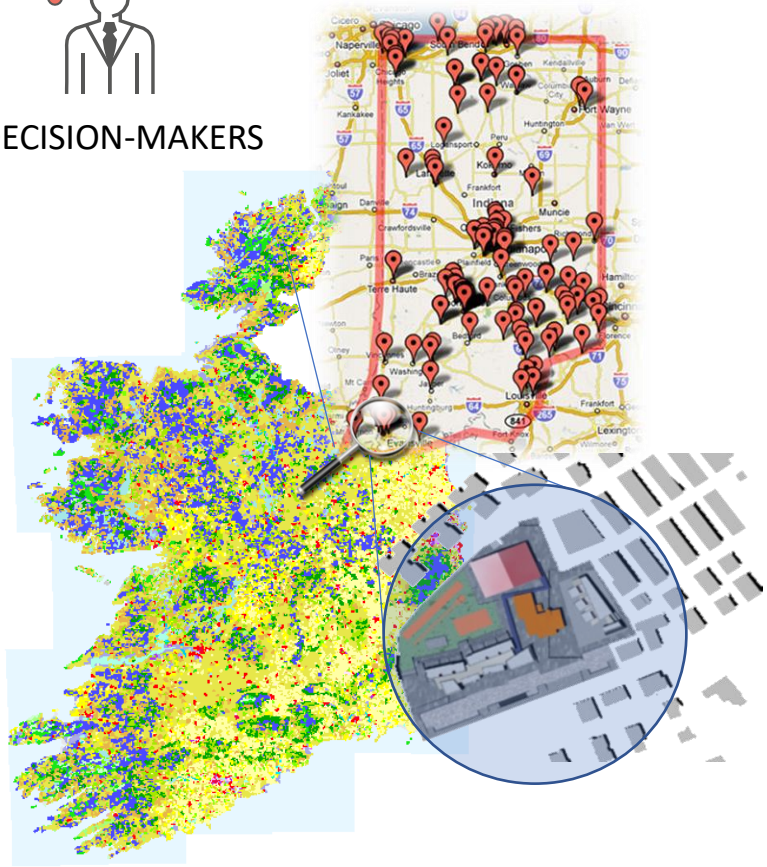
Why
How
What

In multi-hazard prone areas

AT TERRITORIAL LEVEL

DECISION-MAKERS

WHY?



CONCERNS OF DECISION-MAKERS

WHAT IS THE ACTUAL SAFETY SITUATION?

WHICH SCHOOL SHOULD BE PRIORITIZED?

WHY?

WHAT INTERVENTIONS ARE NECESSARY?

HOW MUCH WOULD RETROFITTING COST?

HOW MANY INTERVENTIONS ARE FEASIBLE GIVE THE AVAILABLE RESOURCES?

HOW SHOULD WE COMMUNICATE THE RISK LEVEL TO THE COMMUNITY?

MANAGEMENT

WHICH SCHOOL FIRST

WHY AND WHAT IS NEEDED

HOW TO DEFINE THE STRATEGIES FOR COST-EFFECTIVE INTERVENTIONS

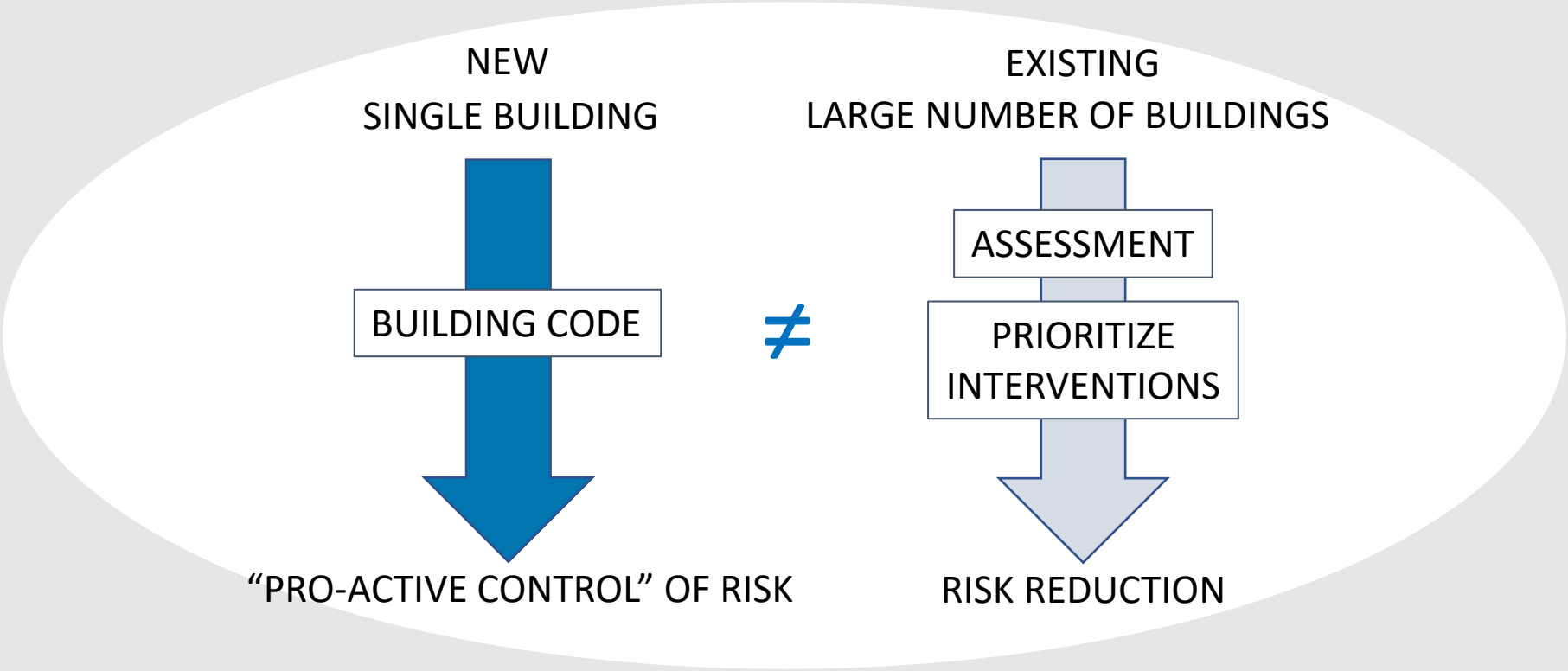
PRIORITIES

INTERVENTIONS COSTS

ACTION PLAN

A first important observation

TWO DIFFERENT PROBLEMS



CAN WE TRANSFER THE APPROACH "TOUT COURT"?

WE NEED CRITERIA AND METHODS FOR ASSESSING SITUATIONS AND DEFINING "WHICH ONE FIRST, WHY AND HOW"

The right balance

INVESTMENTS

PRELIMINARY ASSESSMENT

FINALIZED INTERVENTIONS

SAFETY IMPROVEMENT

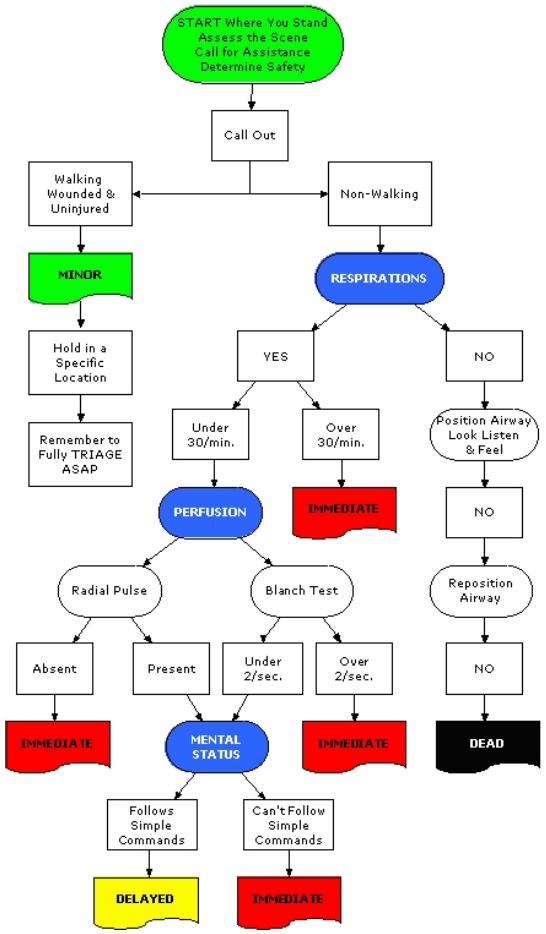
AS MUCH WIDESPREAD AND EFFECTIVE AS POSSIBLE

HOW TO ASSESS, AND "HOW MUCH IS ENOUGH" TO KNOW FOR DEFINING WHAT IS OPPORTUNE TO DO?

PRIORITIZATION OF THE TREATMENTS FOR A COST-EFFECTIVE ALLOCATION OF RESOURCES

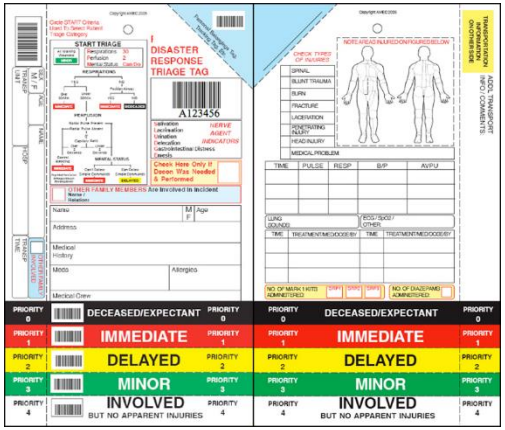
DISASTER MEDICINE

START - Simple Triage And Rapid Treatment



http://mymedicaldiary.blogspot.it

TRIAGE FOR RAPID MEDICAL TREATMENT



http://www.mcitrailers.com

PRAGMATIC CHARACTERIZATION AND EVALUATION

PATIENTS

TREATMENTS

PRIORITY CONVENIENCE

PLANNING

TRIAGE FOR SAFETY UPGRADING

PRAGMATIC CHARACTERIZATION AND EVALUATION

BUILDINGS

INTERVENTION NEEDS

PRIORITY CONVENIENCE

Triage in the treatment process

Rational use of resources

PATIENTS PATIENT NURSE

TRIAGE

PATIENT CLINIC RECORD

SPECIALISTS

INTERVENTION

QUICK ASSESSMENT

PRIORITIZATION CHARACTERIZATION

DESIGN AND IMPLEMENTATION

WHO FIRST
WHY AND HOW

BUILDINGS BUILDING SURVEYOR

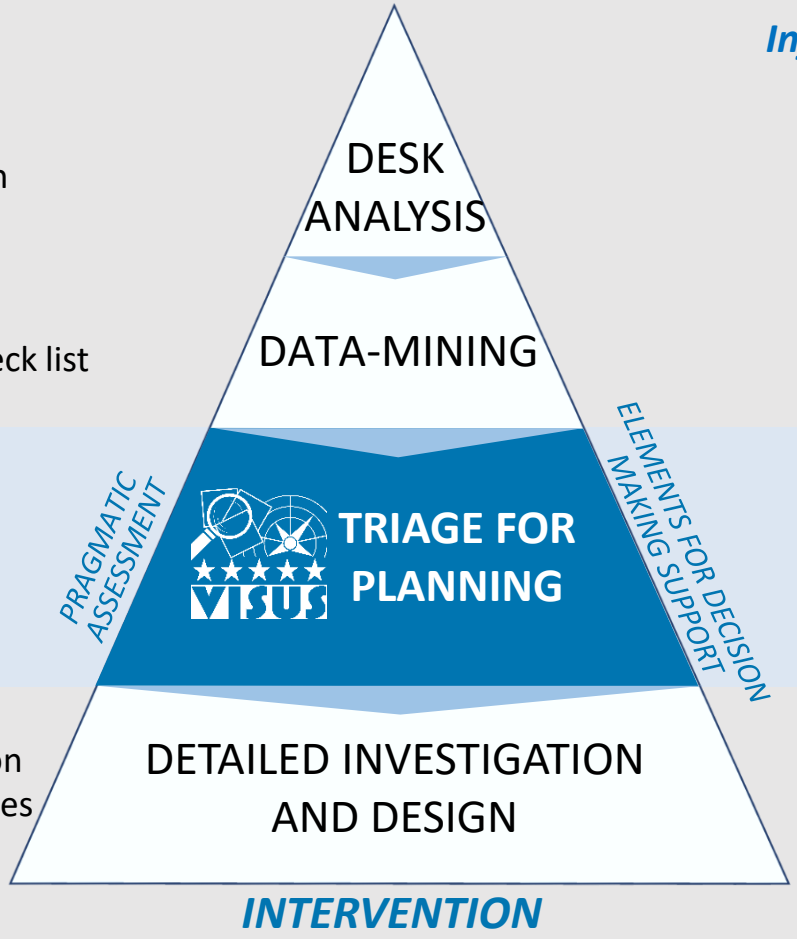
TRIAGE

BUILDING ASSESSMENT REPORT

SPECIALIST ENGINEERS

INTERVENTION

Triage for planning



INPUT
data-approach

Desk analysis of available documentation

Collection data
Questionnaire/form/check list

Visual inspection by trained surveyors

Detailed data acquisition and quantitative analyses

OUTPUT
Information for decision making

Preliminary classification

Class or index of risk
Priority ranking for deepening/intervention

- *Safety-weaknesses characterization*
- *Intervention-needs identification*
- *Budget allocation estimation*
- *Decision support for multicriteria definition of intervention strategies*

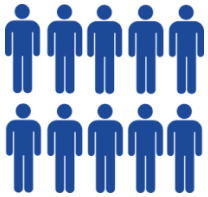
In-depth/specific assessment
Safety design
Detailed cost quantification

HOW?

How assessing a large number of learning facilities
for characterizing the situation and defining the priorities of intervention

THE ANALOGY

large number of patients

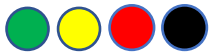


rapid assessment situation

main issues

nurse
(trained for medical triage)

situation/priority



treatment rooting

T1 **T2** **T3** **T4** **Tn**

Who first?
Why?
What?
How many?

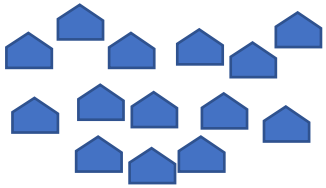
TRIAGE

pragmatic assessment

prioritization

treatment actions

large number of schools



rapid assessment situation

surveyor
(trained for technical triage)

main issues

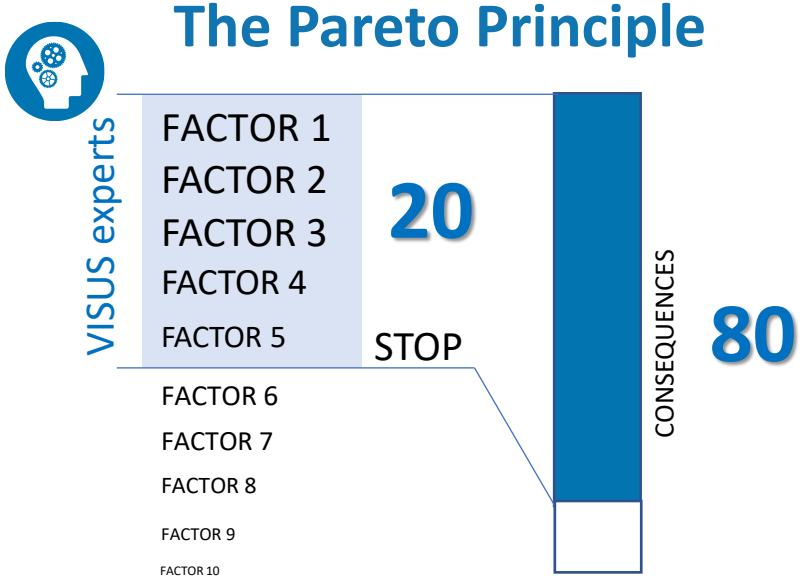
situation/priority

treatment rooting

A1 **A2** **A3** **A4** **An**

Pareto principle

80-20 Rule
The Pareto Principle



20% of the input
(time, resources, effort)

accounts for **80% of the output**
(results, rewards)

HOW

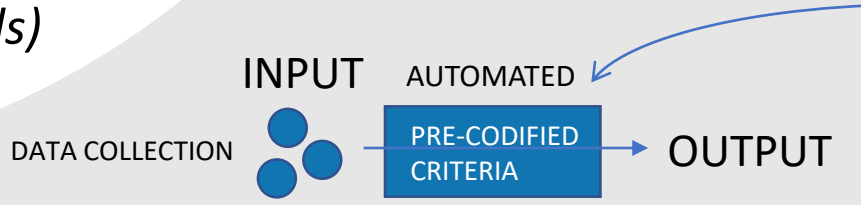
How to define an assessment procedure pragmatic and effective?

Elicitation of expert's knowledge

for identifying the main factors
pre-codifed evaluation criteria

ELICITATION PROCESS

PRE-CODIFICATION OF EXPERT REASONING

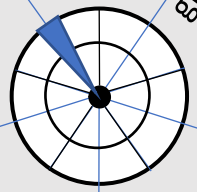


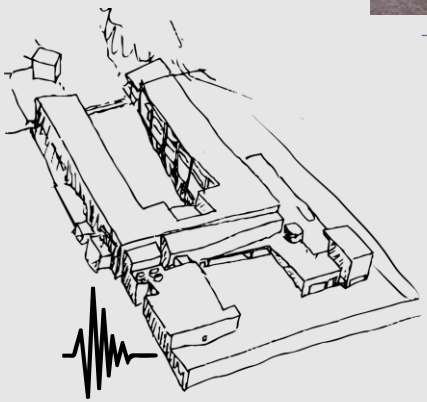
Multi-dimensional problem

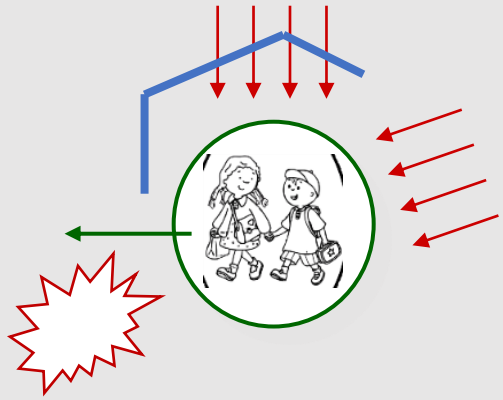
HOW?

Main aspects to investigate and to assess

Site
Buildings
Facilities
Schoolyard







Life Safety assessment requires to consider **every situation that can cause injuries or deaths as a consequence of an adverse event (earthquake, flood, fire, wind, incident).**

PHYSICAL ENVIRONMENT **SAFETY ISSUES**

LOCATION/SITE		*Site effects, soil amplification, landslides, …*
STRUCTURE	GLOBAL	*Response of structure (global behaviour)*
	LOCAL *(ENVELOPE)*	*Response of structural elements (local response)*
NON-STRUCT. (*CONTENT*)		*Response of non-structural elements/content*
FUNCTIONALITY (*COMFORT*)		*Emergency systems, escape ways (internal and external)*

SAFETY ASSESSMENT IS A MULTIDIMENSIONAL PROBLEM

A SINGLE NUMBER OR INDICATOR IS NOT SUFFICIENT FOR AN EXHAUSTIVE SAFETY-CHARACTERIZATION

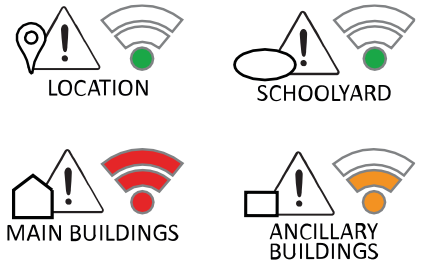
Graphical indicators

Information for decision

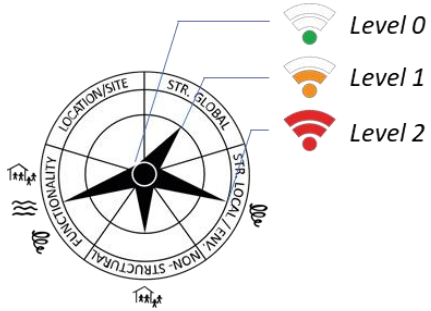
OUTCOMES

Safety situation

WHERE
Warning levels



WHAT (issue and cause)
Rose of intervention needs



FOR EACH BUILDING AND SCHOOLYARD

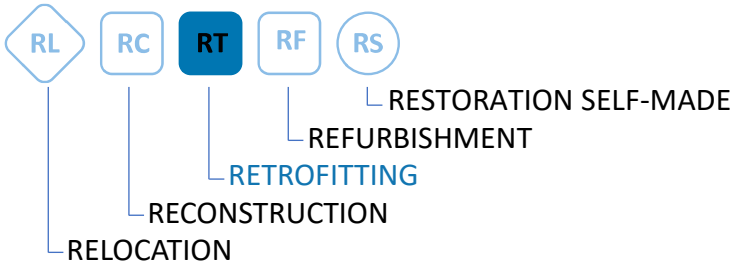
OVERALL MULTI-HAZARD SAFETY JUDGEMENT

FOR EACH HAZARD

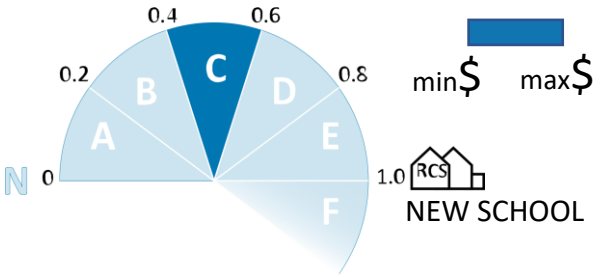
FOR THE SCHOOL COMPLEX

Safety upgrading needs

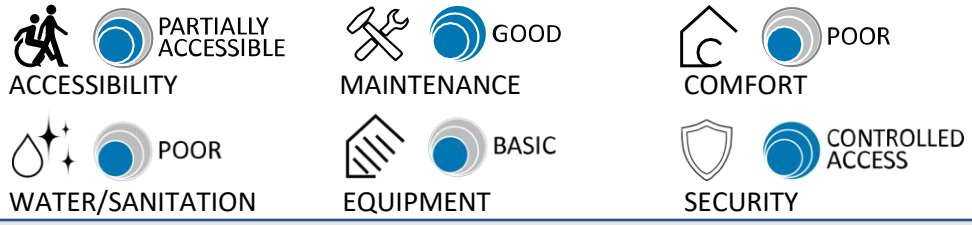
HOW (SUGGESTED)
Safety upgrading actions



HOW MUCH (PRELIMINARY ESTIMATION)
Budget allocation



Status



INFORMATION FOR

HOW

assesses the safety situation for all relevant hazards and ordinary use (**MULTI-HAZARD**)

EARTHQUAKE, WATER-RELATED, AIR-RELATED, FIRE, ORDINARY USE

VISUS METHODODOLOGY

Visual Inspection for defining Safety Upgrading Strategies

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evaluates the safety situation of a large number of learning facilities for the optimization of resources use (**TECHNICAL TRIAGE**)

takes into account the local characteristics of the country (**ADAPTATION**)

transfers the knowledge to local personnel (**TRAINING**)

acquires information through rapid **SURVEYS**

applies validated, uniform and rapid evaluations (**AUTOMATED** elaboration with **PRE-CODIFIED** algorithms)

Assessing learning facilities

How

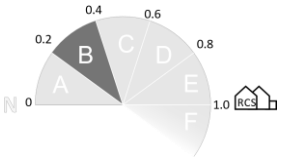
WHAT

WARNING LEVELS

ROSE OF INTERVENTION NEEDS

SAFETY STARS

BUDGET ALLOCATION



DATABASE

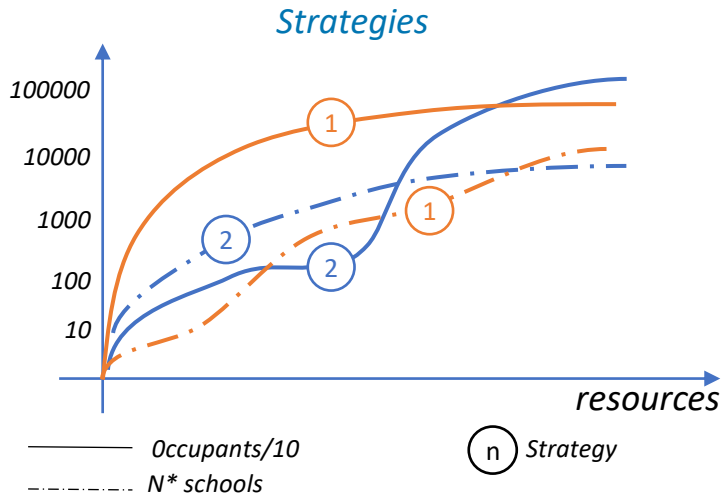
WEB-MAPS

- **GRAPHICAL INDICATORS** on safety situation, safety upgrading needs, school characteristics
- **INDIVIDUAL REPORTS** comprising a technical description of outcomes for each school assessed
- **COLLECTIVE REPORT** presenting an overview of the outcomes for all the schools assessed
- **DATABASE** with all the outcomes (school characteristics and general information, safety indicators, intervention and resources needs)
- **MAPS** with the geolocation of each school and a summary of the outcomes

To define the strategies

The **OUTCOMES OF VISUS** methodology enable decision-makers to **DEVELOP VARIOUS SAFETY UPGRADING STRATEGIES**, such as:

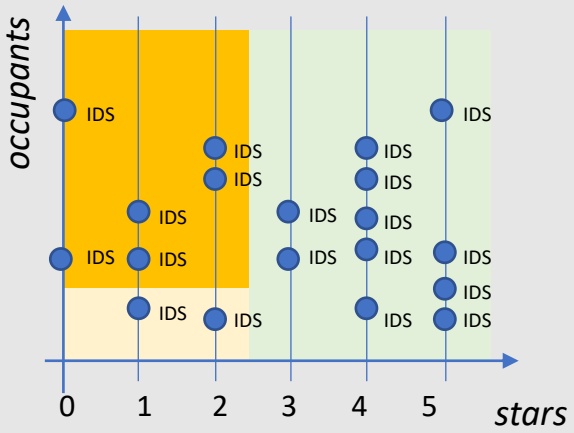
- prioritization by **exposure to a specific hazard** or multiple hazards (considering also the ordinary use)
- prioritization by **physical vulnerability**
- prioritization by **number of occupants**
- prioritization by **type of critical issue** identified (e.g. structural critical issue, non-structural critical issue, problems of location)
- …



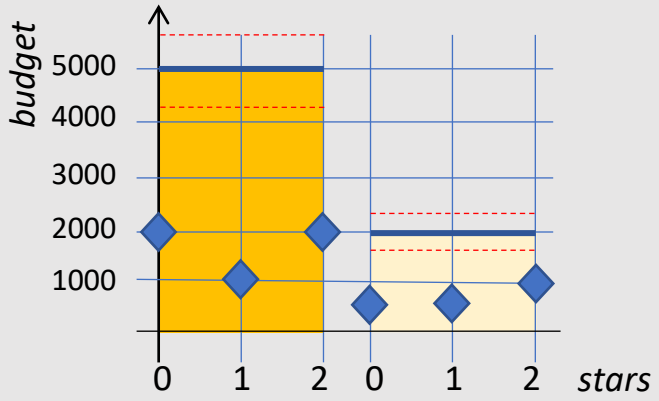
VISUS database

SCHOOL SAFETY
UPGRADING
ACTION PLAN

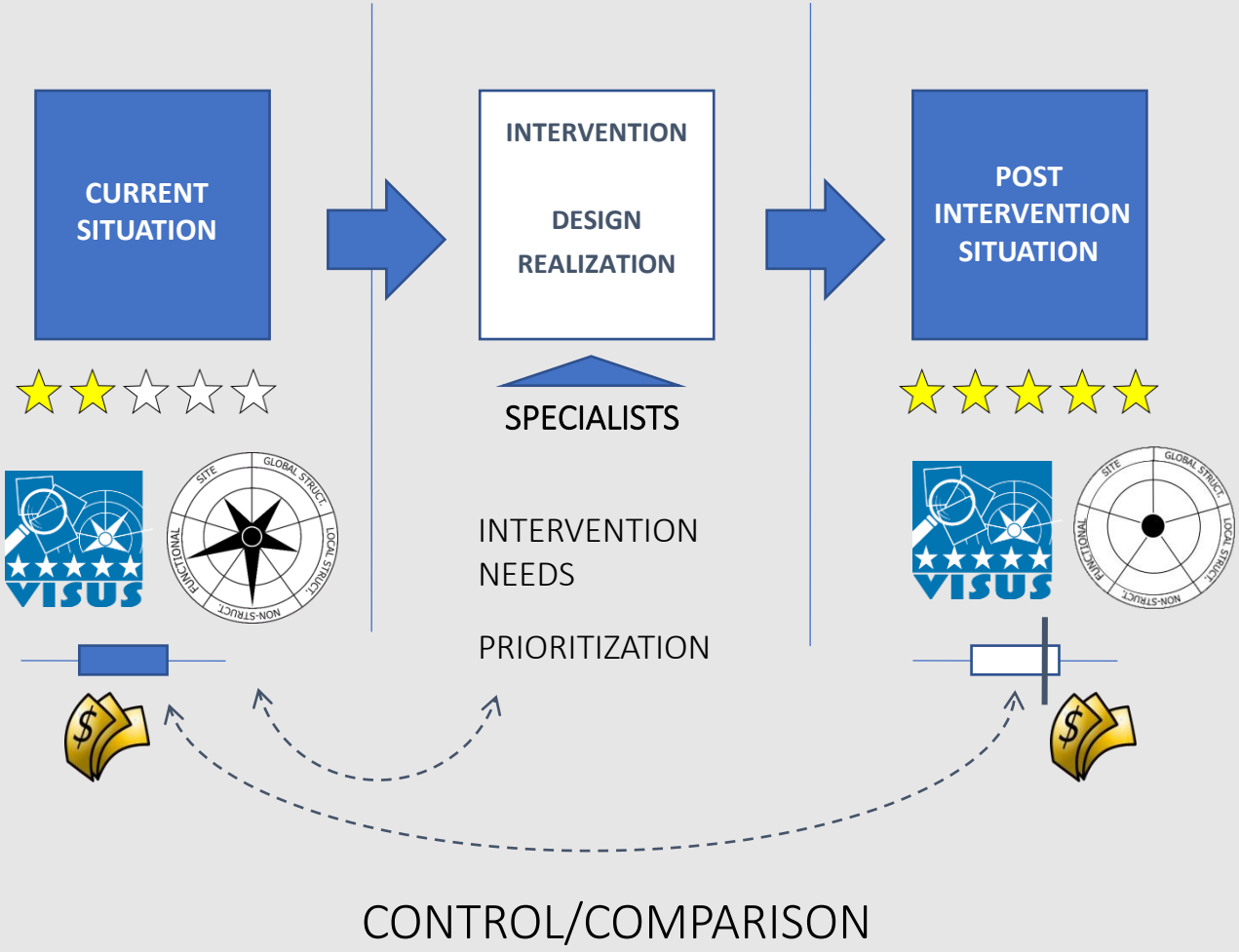
Defining priorities



Defining and managing budget allocation



VISUS: A TOOL FOR INDIVIDUATING, MANAGING AND CONTROLLING THE PROCESS OF ACTIONS OF RISK MITIGATION



3

Understand how VISUS works

1. **PREPARATION**, with **ADAPTATION** of VISUS to local context and **TRAINING** of surveyors and local experts on VISUS
2. Execution of the **SURVEYS** and upload of data
3. Automated **ELABORATION** of the survey data through pre-codified algorithms
4. Automated creation of **REPORTS** and development to decision-makers

How UNESCO-VISUS works

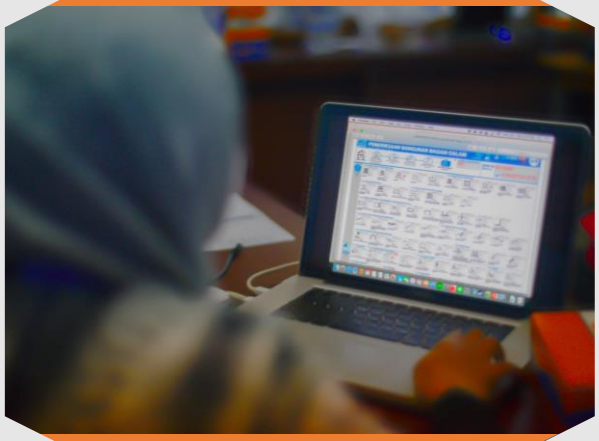
Training and learn-by-doing

Preparation meeting

Training

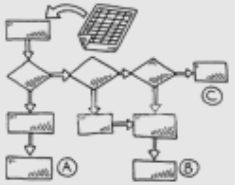
Exercise

Survey



Data upload

AUTOMATED ELABORATION



Outcomes

The phases

Preparation

Steering committee

- UNESCO headquarters
- SPRINT-UNIUD

Local committee

- Focal point
- Local technicians
- Local UNESCO

ADAPTATION
to local specificities

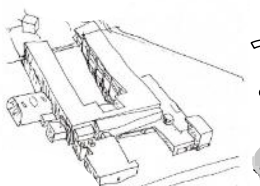
ADAPTATION FORMS

Training

Training of local surveyors
(university students, technicians…)

Survey

SELF-MANAGED



VISUS TRAINED SURVEYORS

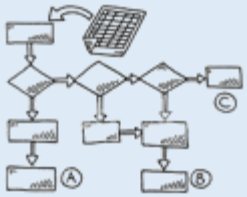
SURVEY SUPPORT TOOL

Graphical language

Elaboration

AUTOMATED

VISUS 'blue-box' software



based on pre-codified evaluation criteria

Outcomes

i-VISUS application

With the support of local committee

ADAPTATION TO LOCAL CHARACTERISTICS

of the country

Preparation phase

Meeting with decision makers

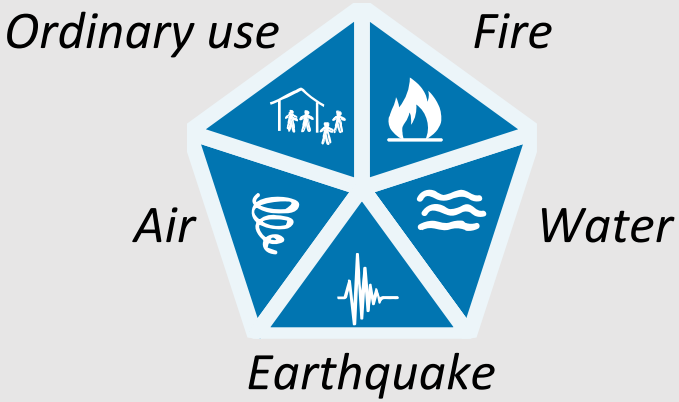
Training of local surveyors (students and technicians)

On-site training

Learn-by-doing

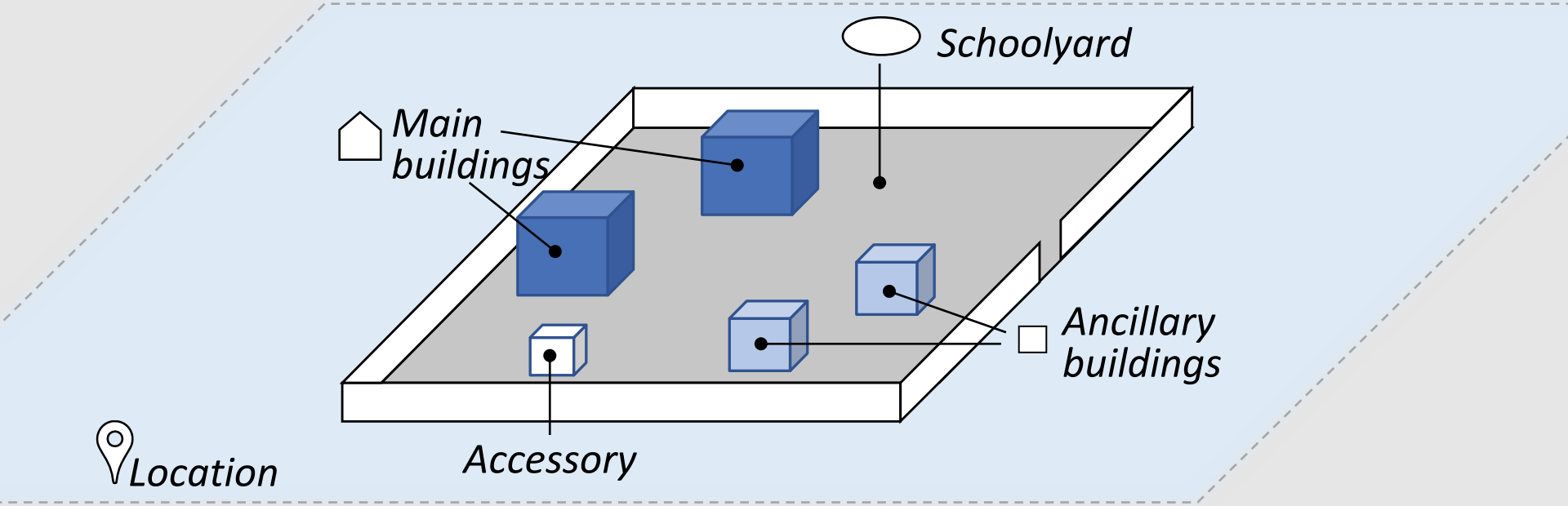
Items to survey

Multi-hazard



Components of physical environment

School complex



Survey execution

Survey phase




PREPARATION

PRE-SURVEY
DESK WORK

SURVEY

ON FIELD

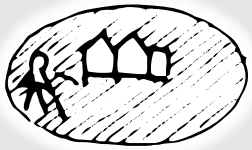
ELABORATION

POST-SURVEY
DESK WORK

GENERAL INFORMATION

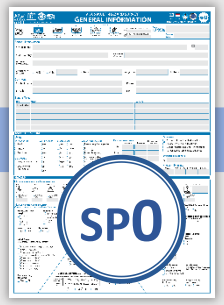
LOCATION SURVEY

SCHOOLYARD SURVEY

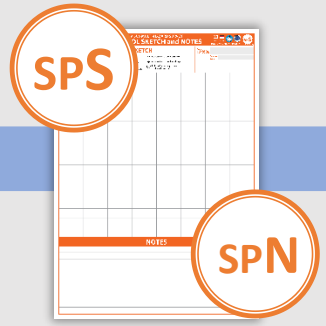


BUILDING EXTERNAL SURVEY

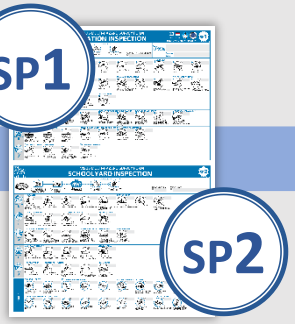
BUILDING INTERNAL SURVEY



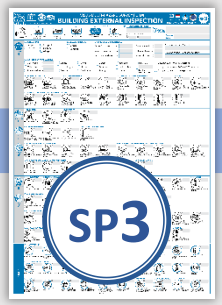
"GENERAL INFORMATION" FORM



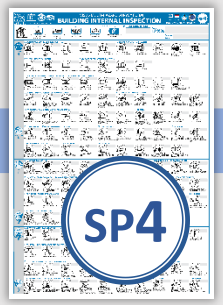
"SCHOOL SKETCH AND NOTES" FORM



"LOCATION INSPECTION" AND "SCHOOLYARD INSPECTION" FORM



"BUILDING EXTERNAL INSPECTION" FORM

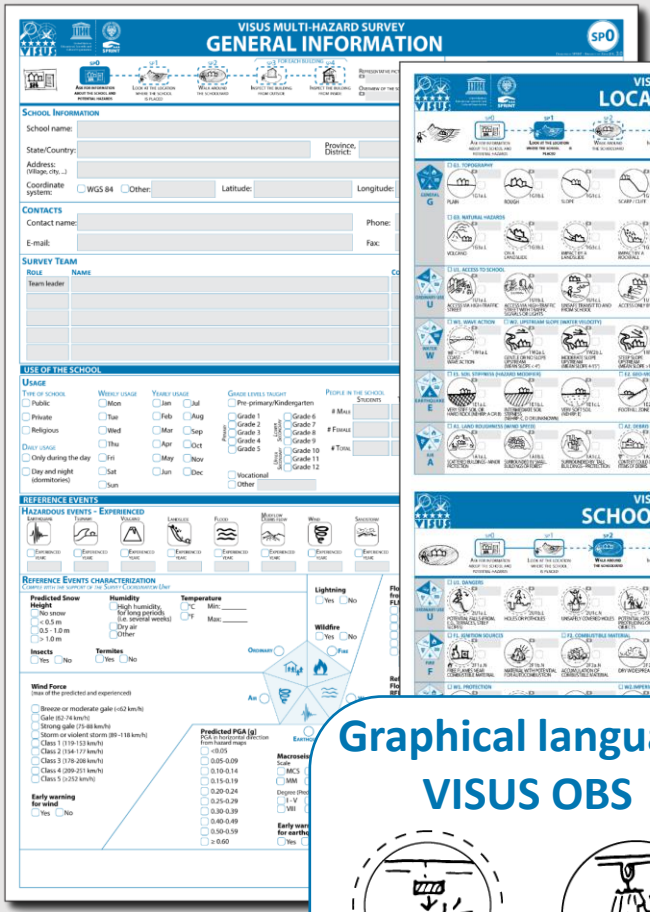


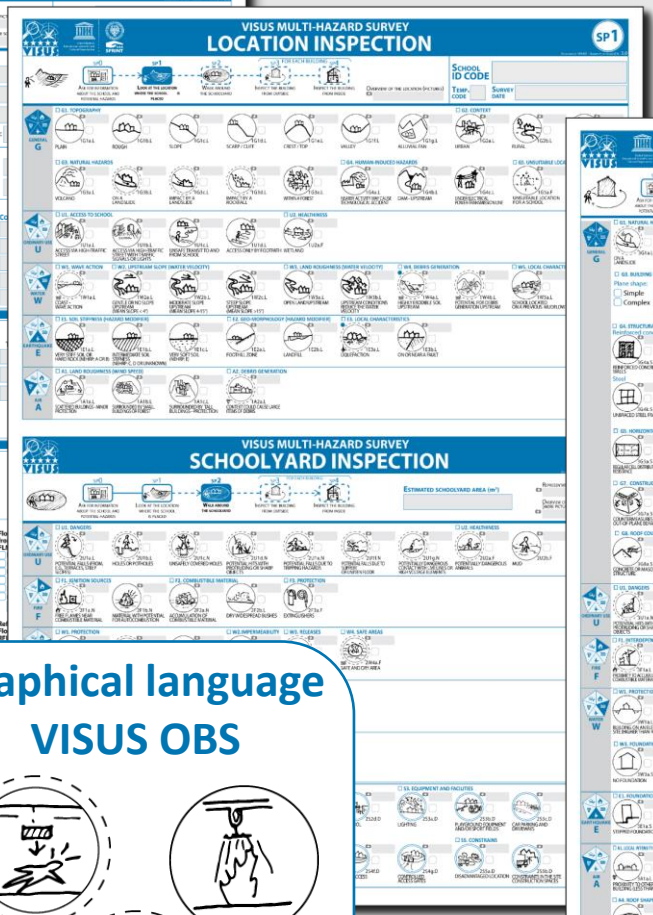
"BUILDING INTERNAL INSPECTION" FORM

Surveys execution

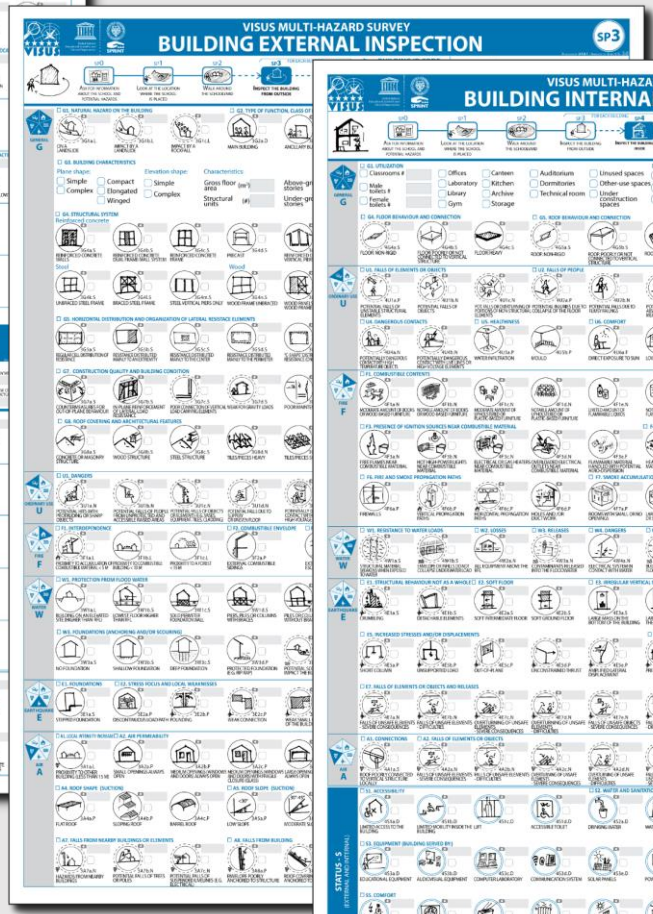
VISUS survey forms

For the school complex
(general information, location and schoolyard)

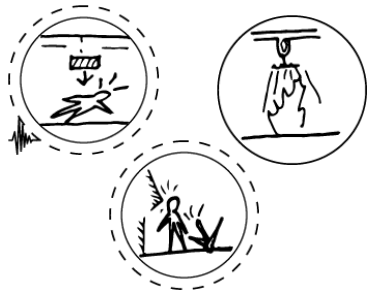




For each school building
(main and ancillary)



Graphical language
VISUS OBS



FORMS AND PICTURES DIRECTLY BY THE TABLET

TO MAKE EASIER AND FASTER THE SURVEY

To reduce COST/BENEFITS (time consuming)
Taking into account the experience of Pilot projects

VIDEO WITH EXAMPLE OF i-VISUS DATA COMPILATION

The i-VISUS application

Main purposes

On cloud

Local

For making surveys

Version for:

- **supporting** the survey of schools,
- **collecting pictures** associated to the OBS,
- **uploading** the data to the VISUS cloud and database

Adaptation values are **defined** for each project

Data should be **validated** before the final evaluation of outcomes

For capacity building

Version for:

- **testing** how the methodology works,
- becoming **familiar** with the use of the forms,
- **understand** how different parameters could **affect the outcomes** and their **importance**

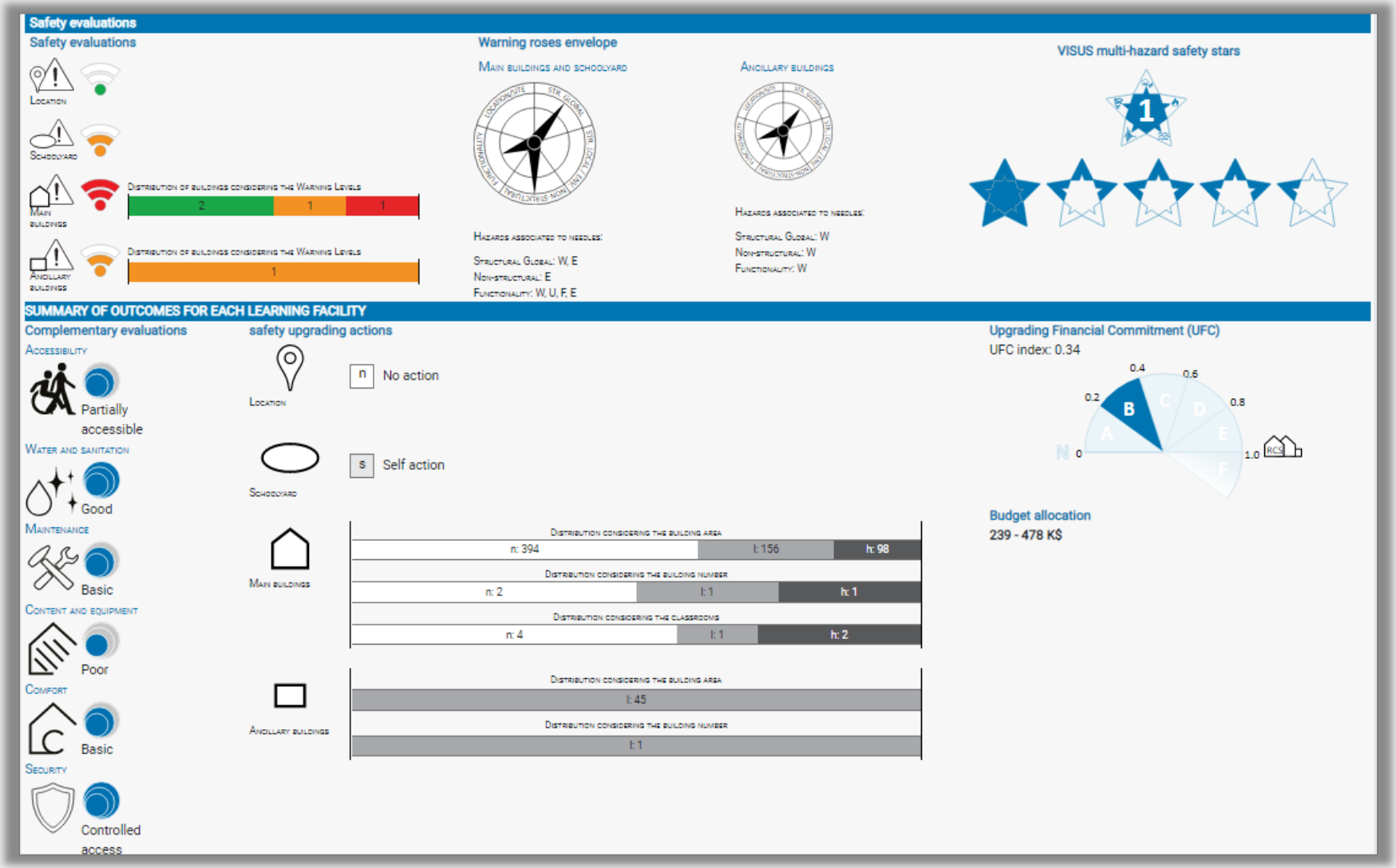
Adaptation values can be **modified** to test their effects

Data are **not uploaded** on the VISUS database

VISUS outcomes

VISUS evaluation

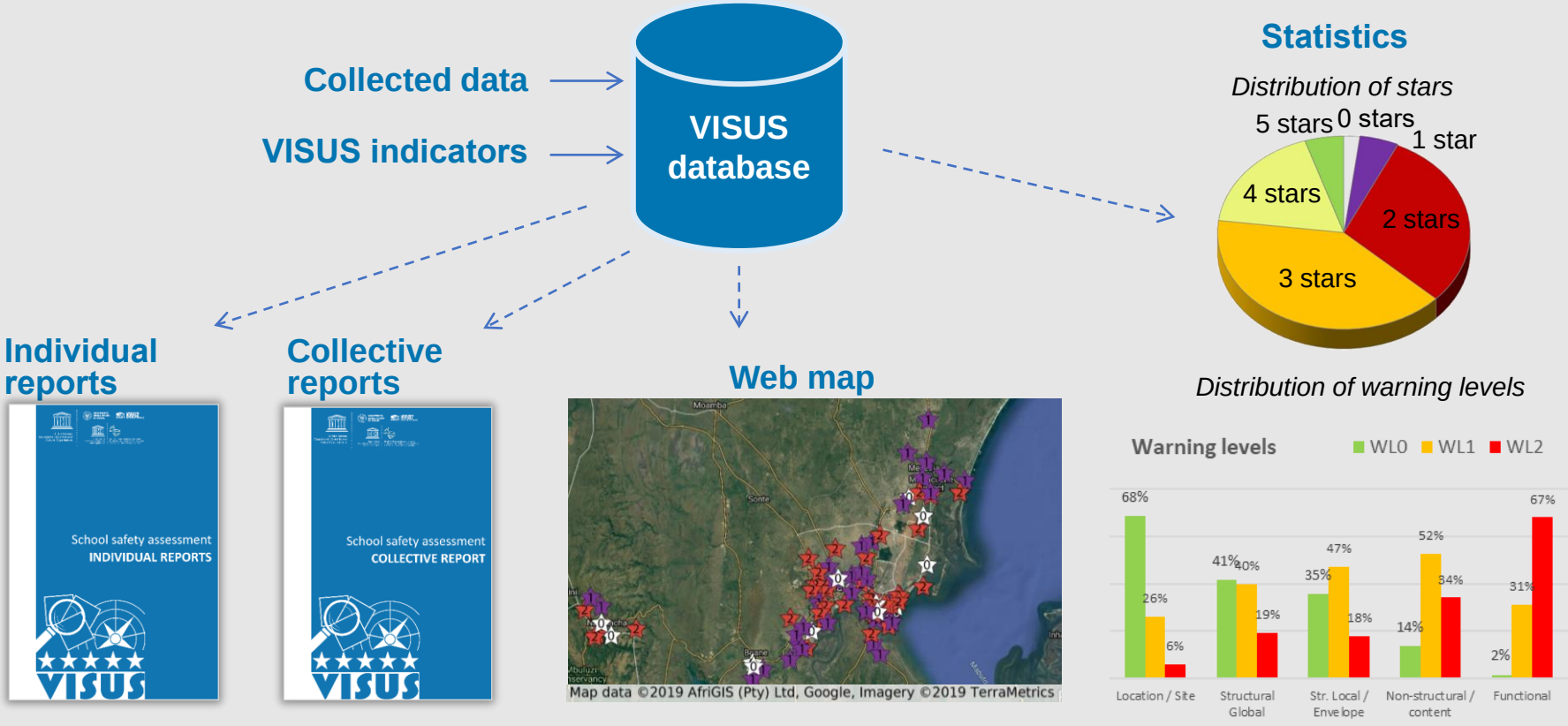
Safety situation	Safety upgrading needs	Status



AVAILABILITY OF THE ASSESSMENT RESULTS *through:*

DATABASE

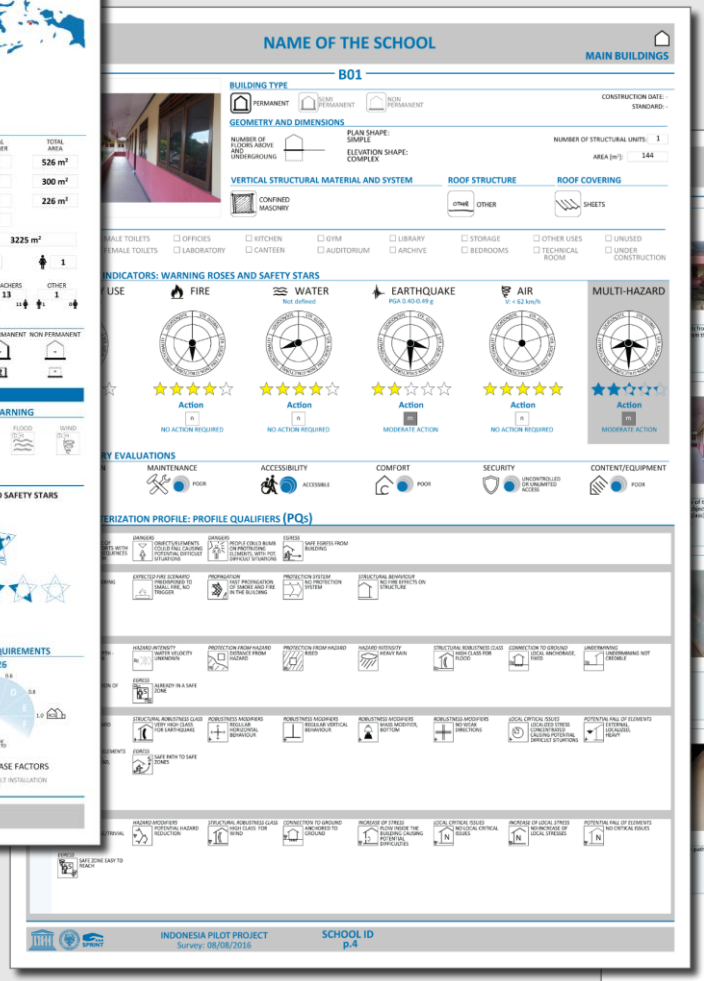
with all the outcomes (school characteristics and general information, safety indicators, intervention and resources needs)



Individual reports

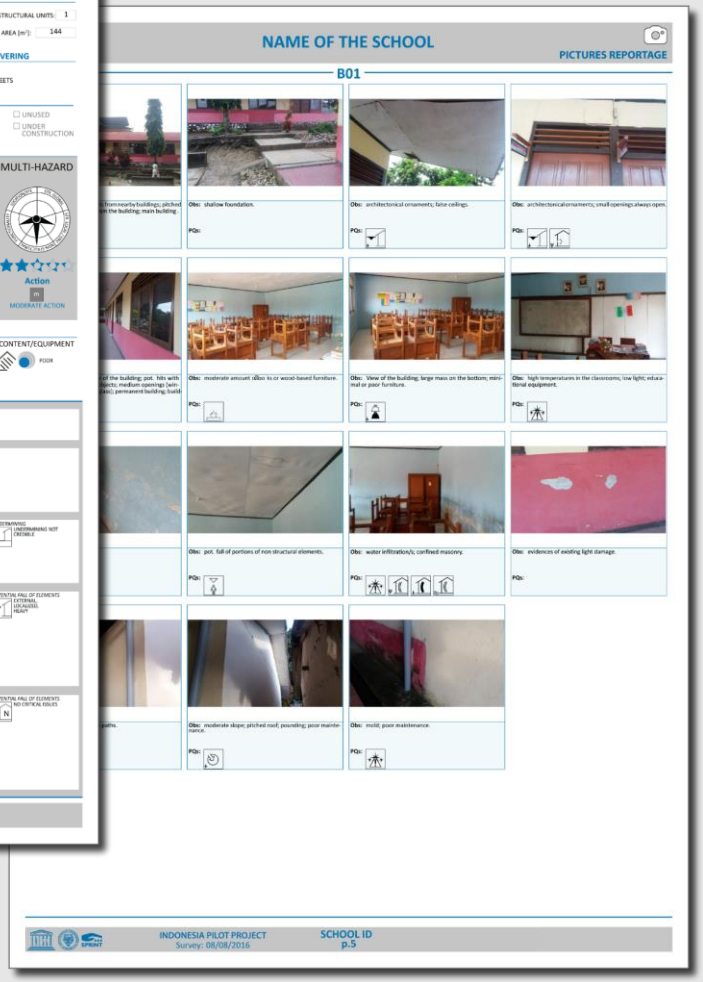
Specific details

School characteristics
Summary of evaluations

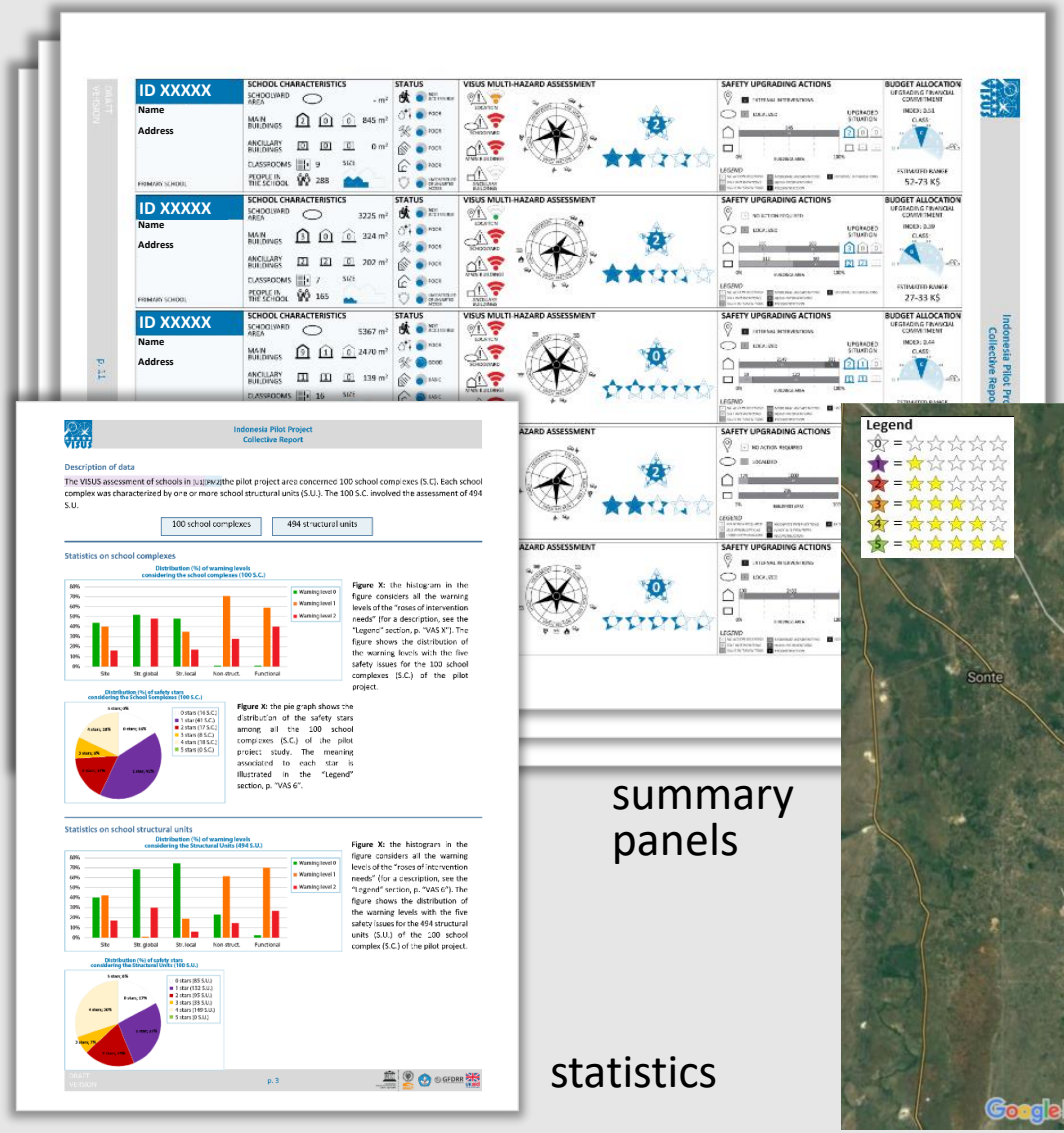


Specific evaluations

Photo reportage
Critical situations



COLLECTIVE REPORTS

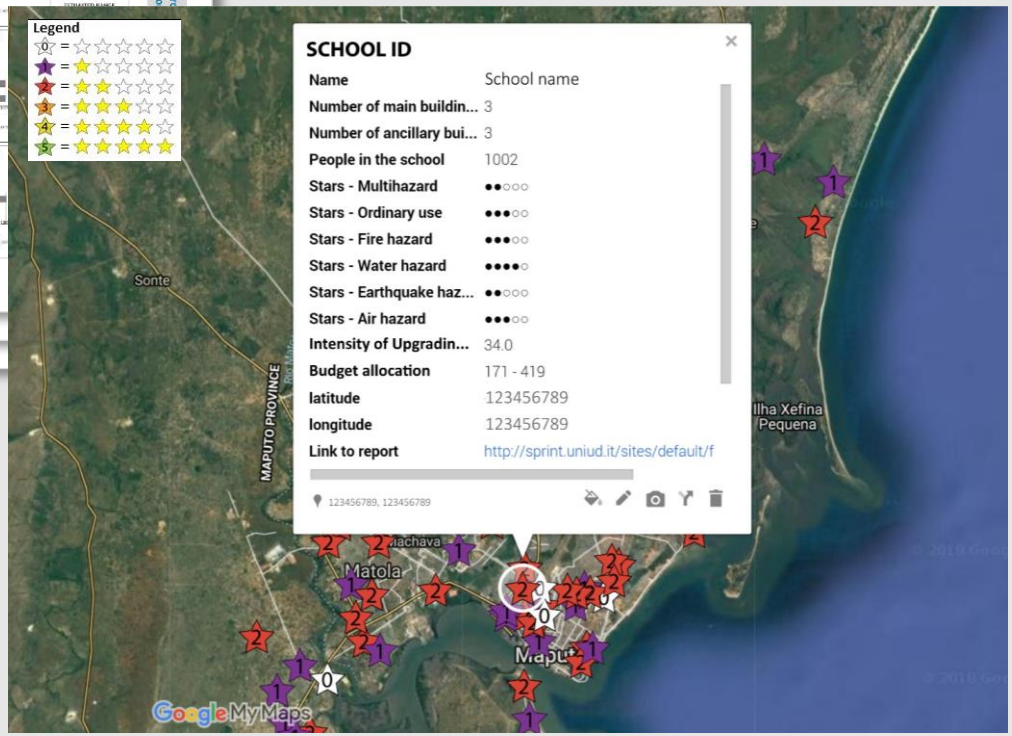


summary panels

statistics

MAPS (WEB MAPS)

with the geolocation of each school and a summary of the outcomes



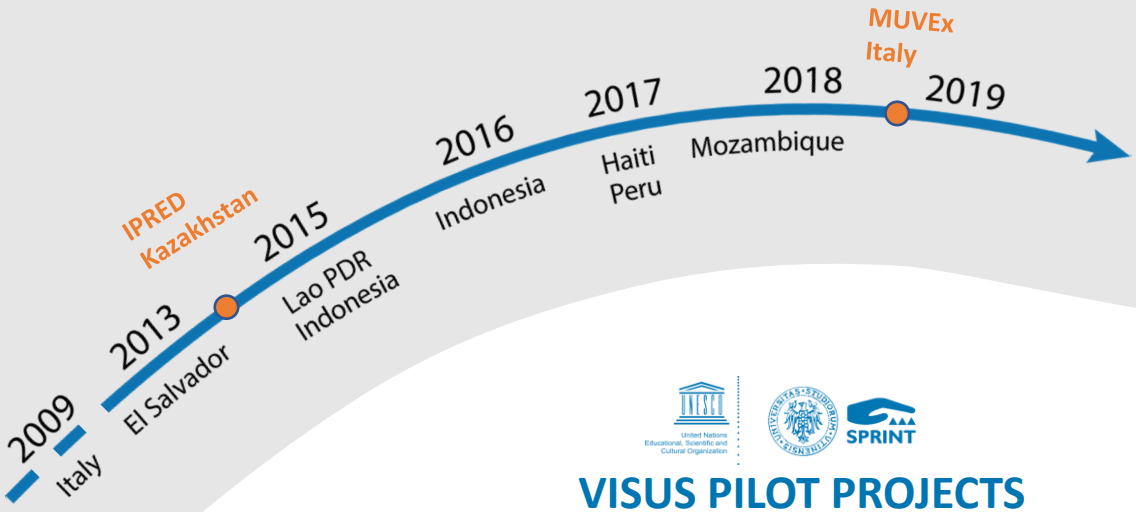
4

Overview of worldwide VISUS pilot projects

Worldwide pilot projects
How VISUS outcomes can support DM

IN DIFFERENT COUNTRIES

GUIDELINES: the result of worldwide pilot projects and scientific revisions



VISUS PILOT PROJECTS

Seismic

Italy
El Salvador

Multi-hazard

Indonesia
Laos
Peru
Haiti
Mozambique

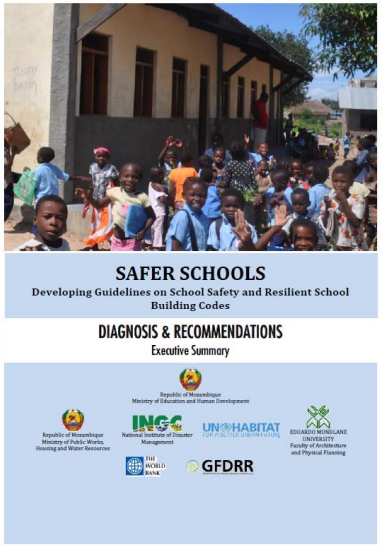
UNESCO-VISUS Mozambique

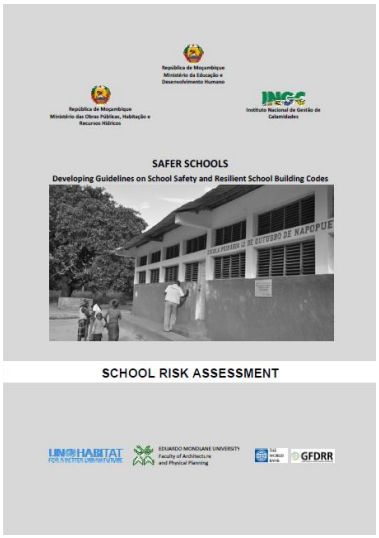
Outcomes

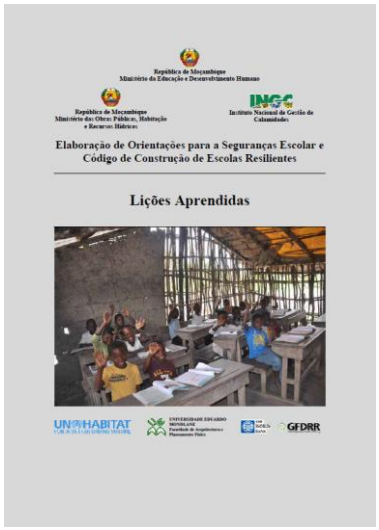
The following outcomes were achieved from the implementation of this project:

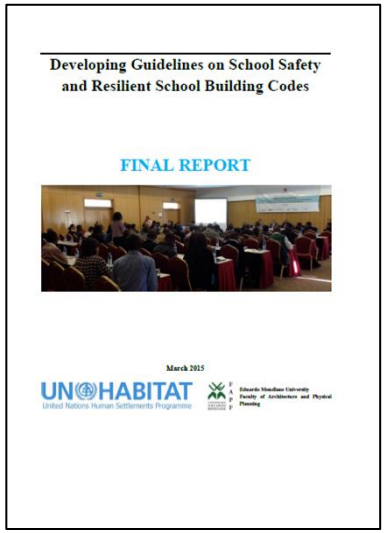
- Training of 30 decision-makers;
- Training of 40 trainers to build capacities locally and ensure the sustainability of the project on the long run;
- Training of 45 surveyors and their;
- Multi-hazard school safety assessments in 100 schools in the province of Maputo;
- 869 School buildings assessed;
- Development of a collective report and 100 individual reports as outputs of this project.

Typologies

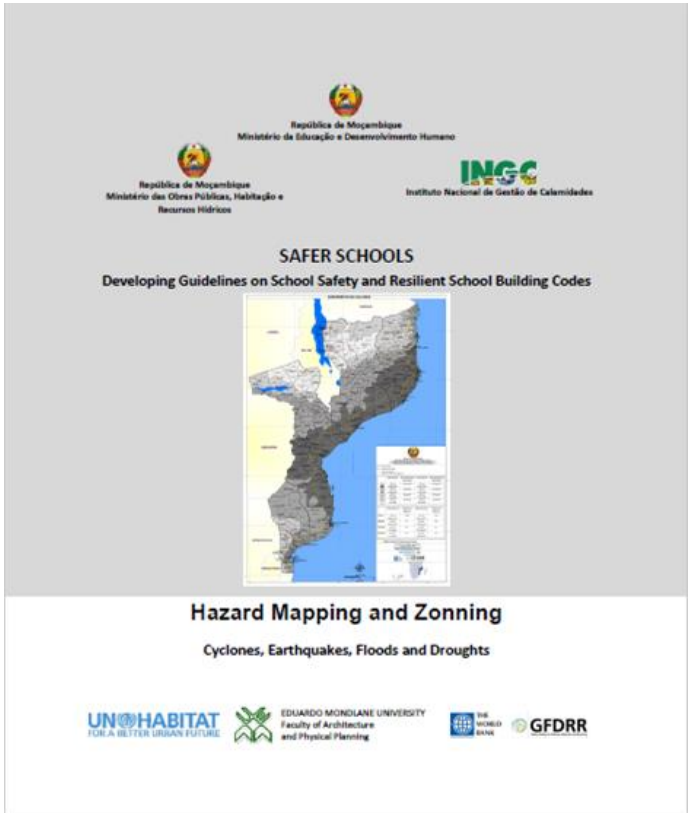






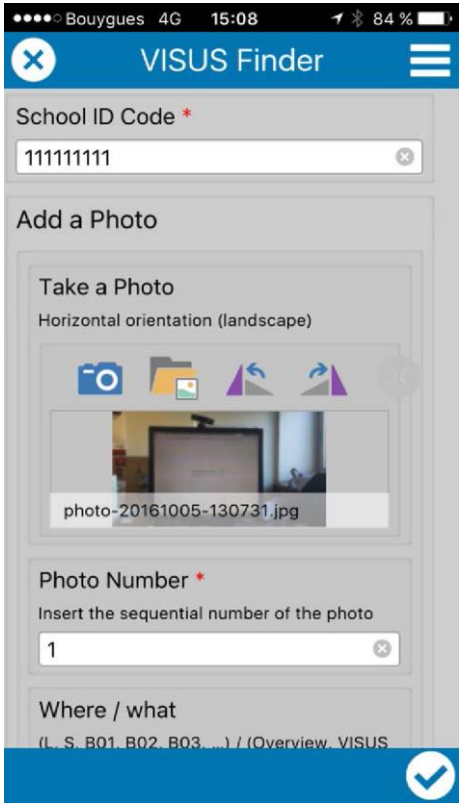


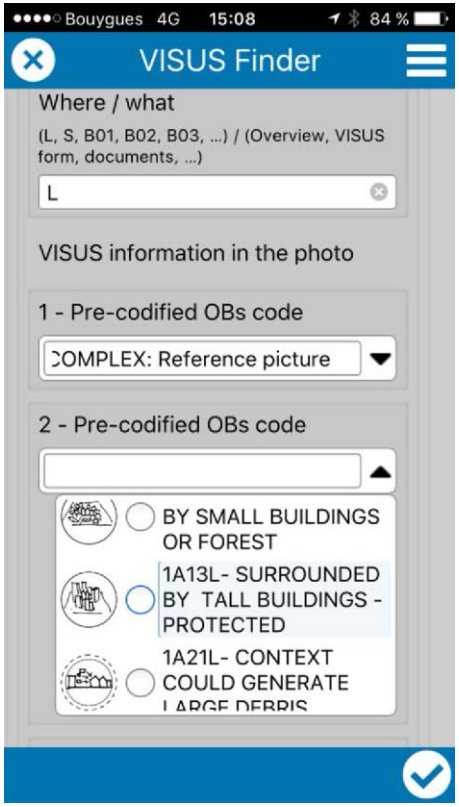
Hazards



Adaptation

Development of materials and tools for the implementation of VISUS including the development of a mobile application adapted for the particularities of the country





Main activities

Capacity building

Training workshop for decision-makers

Training for trainers

Held on 22 November 2017, the meeting saw the participation of 30 decision-makers

40 participants attended the training workshop for trainers from 23 to 24 November 2017

Main activities

Capacity building

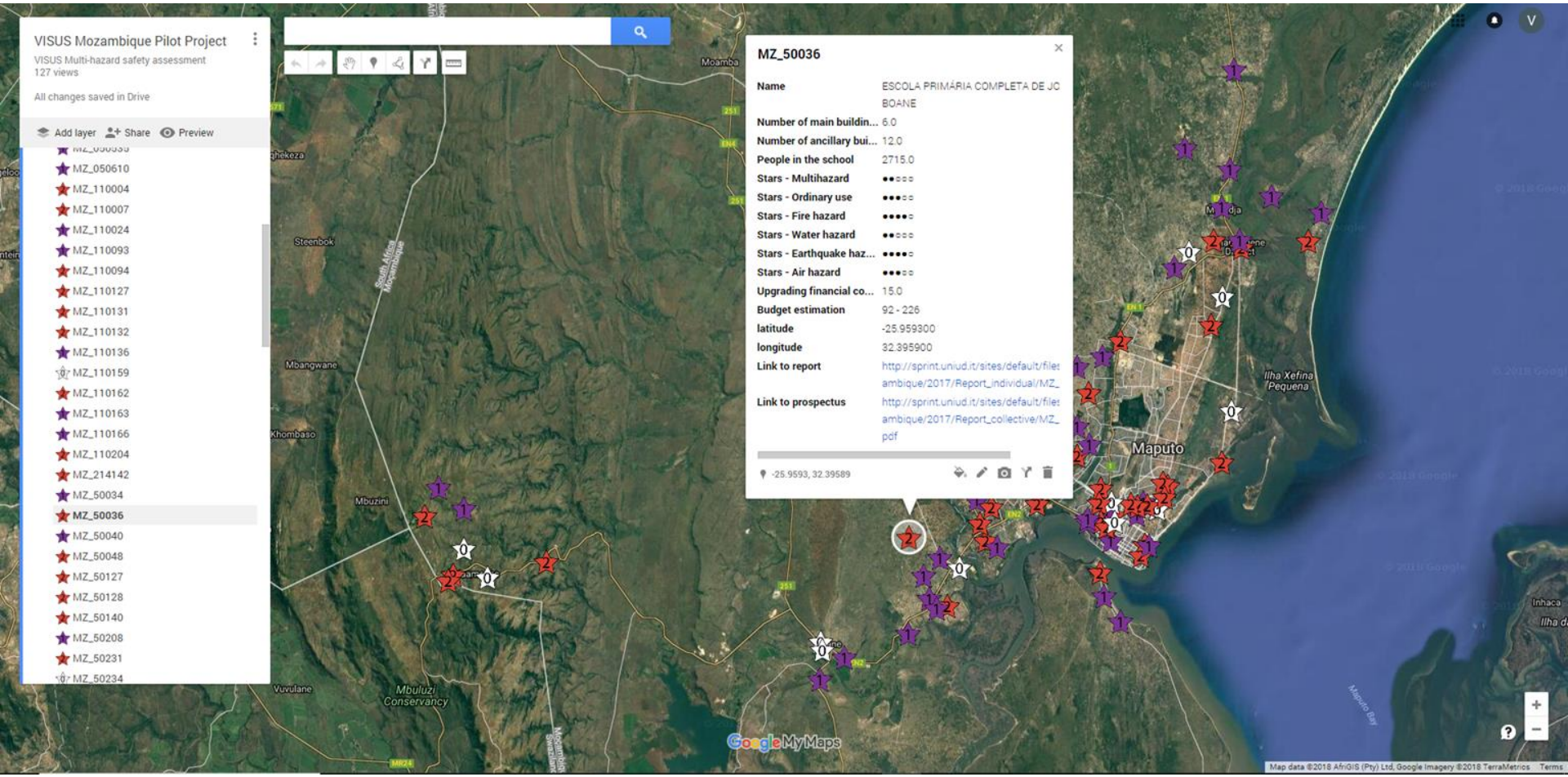
Training workshop for surveyors

Assessment

The training was attended by 30 final-year students. Out of these trained surveyors, the 21 best performers were chosen for the fieldwork

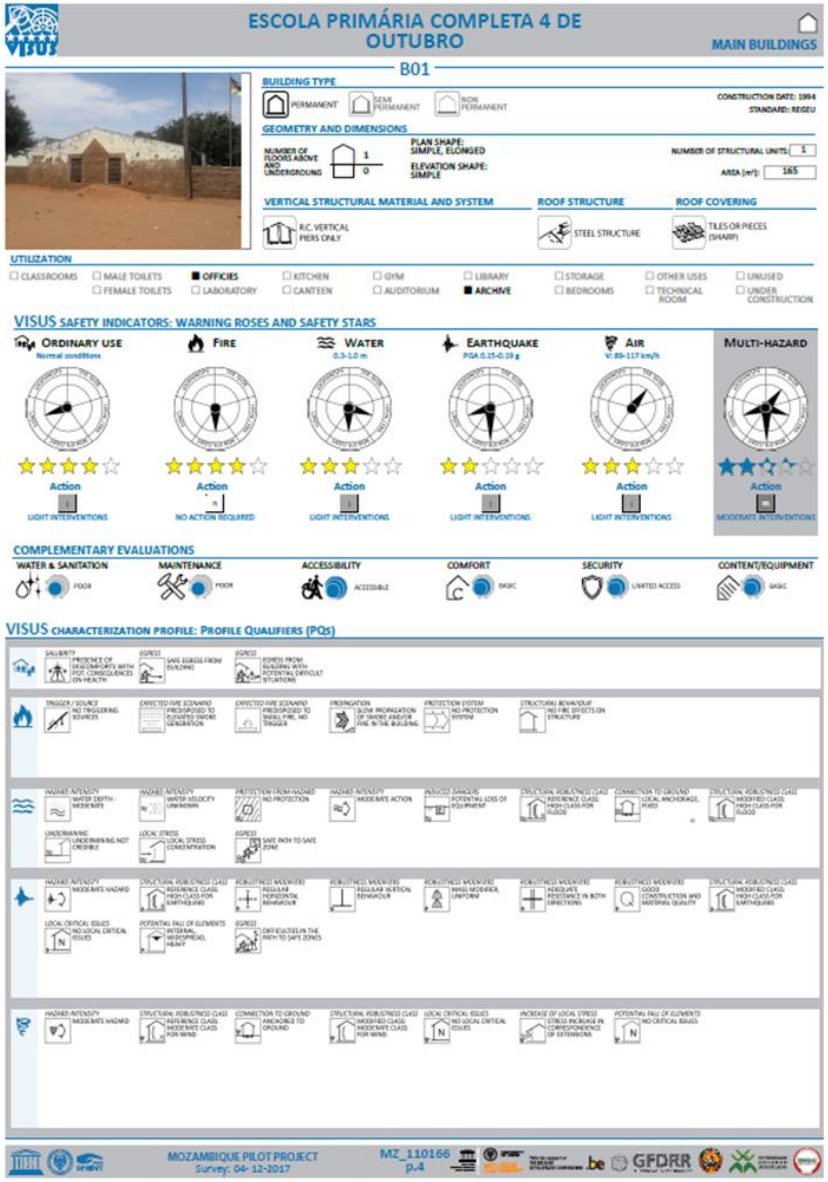
100 schools assessed

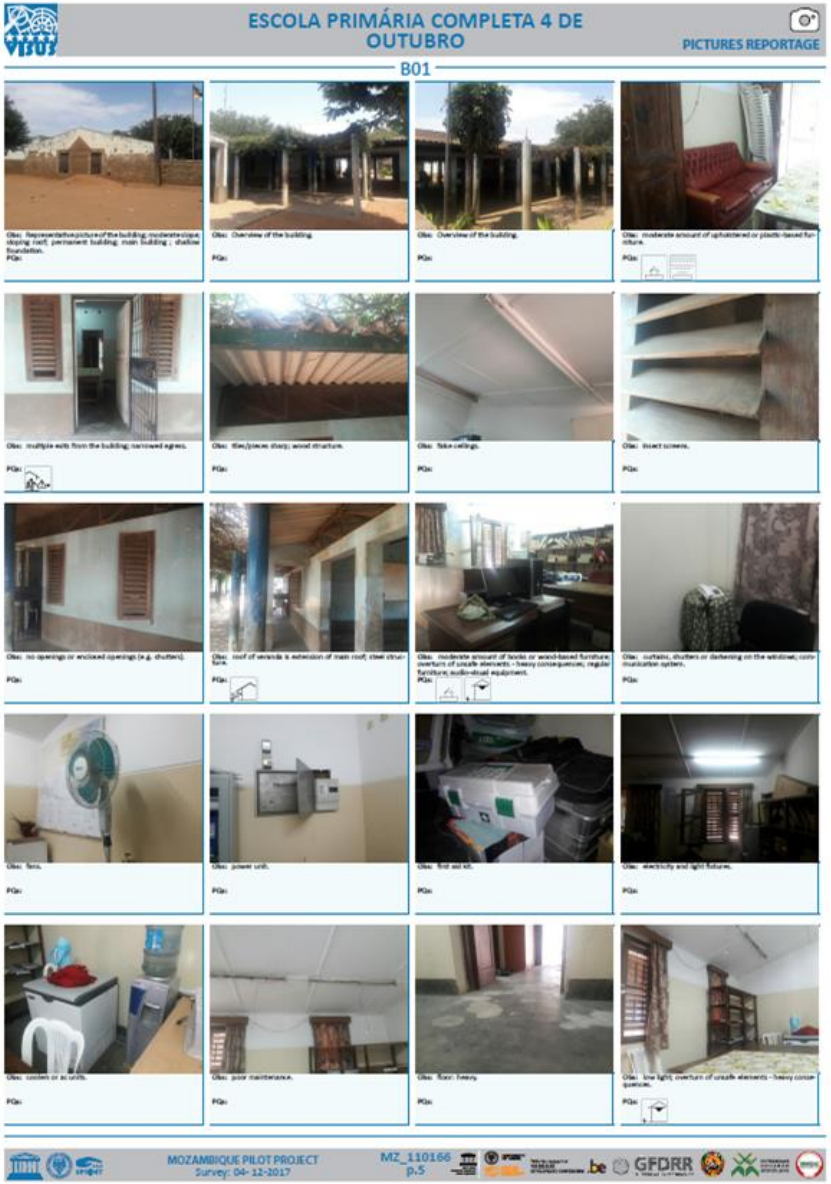
Location of schools assessed



Individual reports

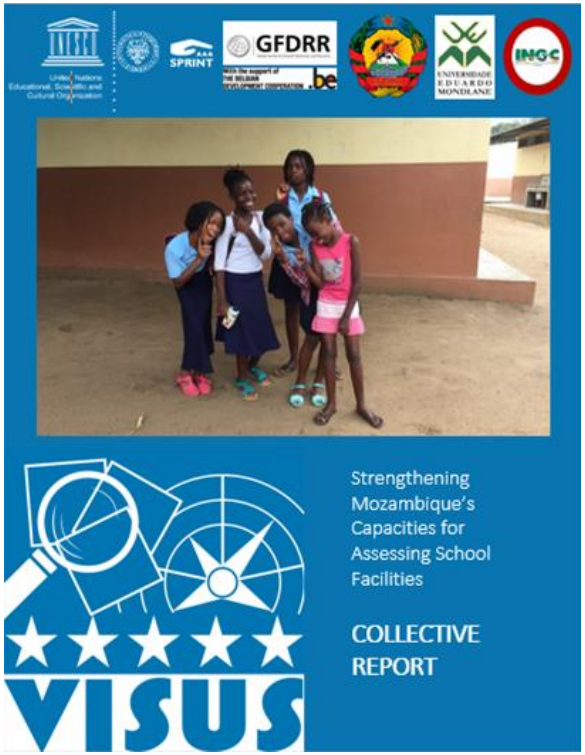
Example

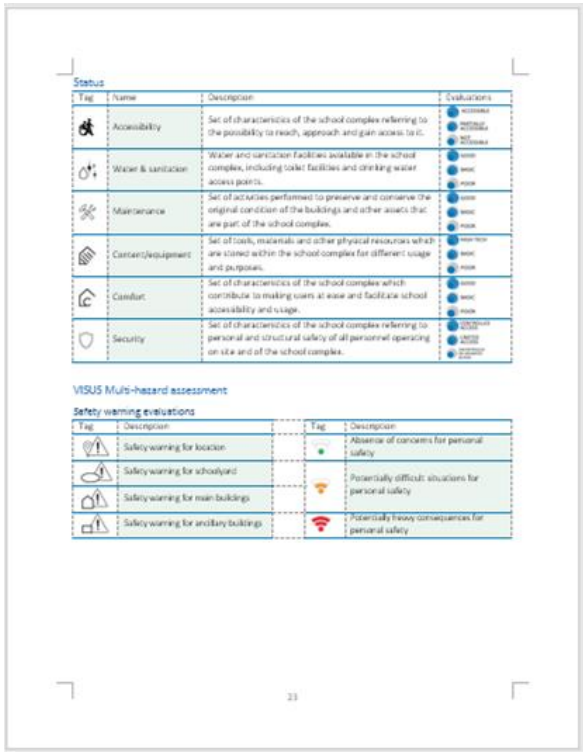


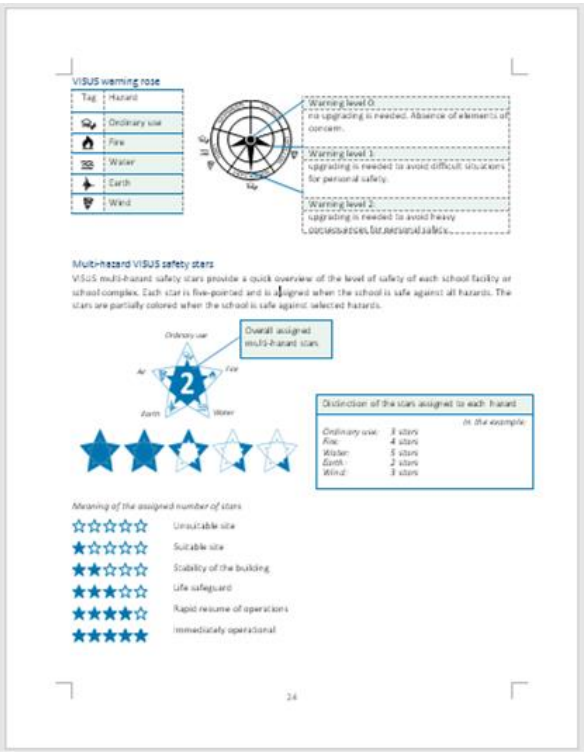


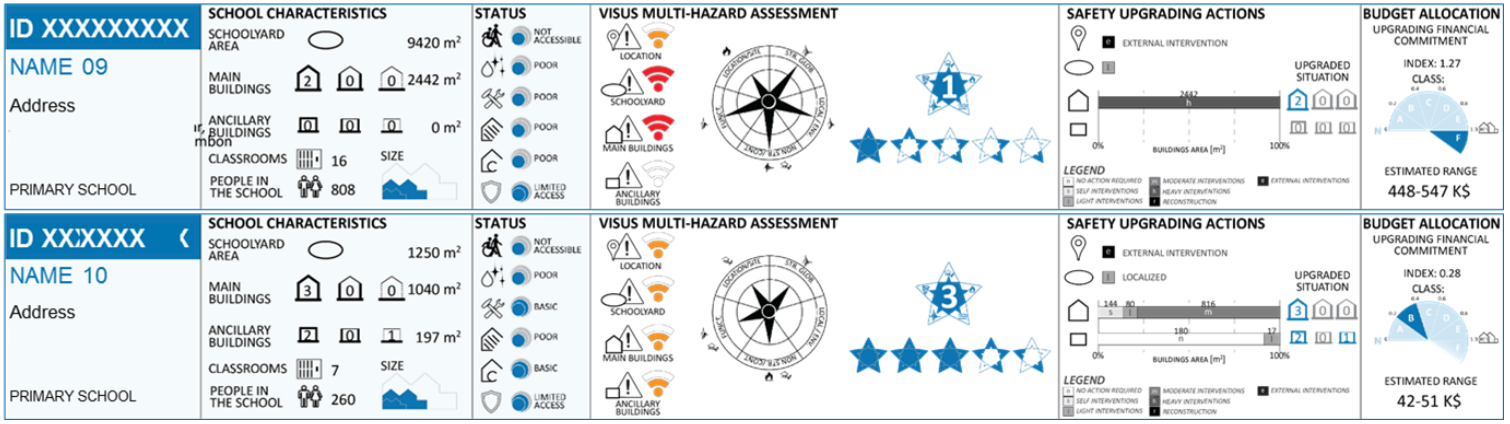
Collective report

Example









Typical school building construction

Ordinary use becomes one of the most common problems in schools.

Overview of main findings

The main observed weakness of the surveyed buildings is their low structural capacity.

Some local structural problems occur at the roof structures.

Overview of main findings

The surveys revealed the presence of structural and non-structural elements which could danger students (e.g. by falling or collapsing) due to their instable conditions;

Presence of asbestos in several schools

Fire protection can be easily achieved.

Strong wind can cause severe damage, especially to roof cover, due to the bad connections to the roof structures.

Floods can reach until 2 meters of the walls of the school and more.

External interventions as mentioned before (drainage, gutters, etc.) can reduce the impact of floods during rainy seasons.

Recommendations

- Launch a national programme for school assessment.
- Implement a prioritization plan for rehabilitation, retrofitting or replacing unsafe schools (including relocation).
- Reinforce the national database of schools with a more detailed information on safety vulnerabilities
- Create a database on the typical damages caused after the impact of natural and technological hazards events.
- Support academic studies from research institutions that will help on improving the adaptation of the methodology to particular local conditions.
- Improve information on costs details (i.e. database of local cost of interventions).
- Plan for continuous monitoring, financing, and oversight for ongoing facilities maintenance and safety.
- Involve parents and communities.

SCIENTIFIC REVIEW

Worldwide institutions involved on the revision and improvement of the methodology

INVOLVED INSTITUTIONS

Bandung Institute of Technology (Indonesia)
Beijing Jiaotong University (China)
Building Research Institute (Japan)
Catholic University of Chile (Chile)
Eduardo Mondlane University (Mozambique)
Institute of Seismology (Kazakhstan)
International Institute of Seismology and Earthquake Engineering (Japan)
Istanbul Technical University (Turkey)
Japan International Cooperation Agency (Japan)
Japan-Peru Center for Earthquake Engineering and Disaster Mitigation (Peru)
King Abdulaziz University (Kingdom of Saudi Arabia)
Kyoto University (Japan)
National Center for Disaster Prevention (Mexico)
National Fire Corps of Italy (Italy)
National Research Institute of Astronomy and Geophysics (Egypt)
Research Institute for Human Settlement (Indonesia)
Technical University of Civil Engineering (Romania)
Technological University of Havana José Antonio Echeverría (Cuba)
Tokyo Polytechnic University (Japan)
University of El Salvador (El Salvador)
University of Tokyo (Japan)
University of Trieste (Italy)
UNESCO IICBA (Ethiopia)
UNESCO-IHE (The Netherlands)
University of Ljubljana (Slovenia) – UNESCO'S Chair
United Nations Environment Programme (UNEP)
United Nations Office for the Coordination of Humanitarian Affairs (OCHA)
UNICEF
Save the Children

Seven countries

VISUS COMING PILOT PROJECTS AND SCALING UP PROGRAMMES UNDER NEGOTIATION AND READY FOR IMPLEMENTATION

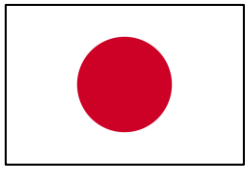
Coming Projects

Dominican Republic
Panama
Costa Rica
Argentina
Ecuador
Syria
Saudi Arabia
Bosnia
Afghanistan
Gambia
Jamaica

Scaling-up

Peru
Haiti
El Salvador
Indonesia
Mozambique

THANKS to our supporters



(In the framework of the UNESCO-IPRED Platform)

United Nations
Educational, Scientific and
Cultural Organization

Indonesian
Fund-in-Trust

Humanitarian Aid
and Civil Protection

The way forward

1) Worldwide implementation through GADRRRES's Members Field Offices and with the Scientific Support of the UNESCO's Chair (SPRINT-Lab, University of Udine)

21,581	Learning facilities to be assessed (prioritizing those belonging to the Associated Schools Network (ASPnet) and those located in UNESCO's Biosphere Reserves, Global Geoparks and World Heritage Sites
416	National and local universities and vocational institutes to be involved
10x2	Regional trainings for decision-makers to be held
20	Regional technical trainings for trainers to be held
416	National trainings of surveyors to be held
193	UNESCO Member States involved (plus the 11 Associated Members of UNESCO)

2) Development of a platform for automatic reporting

3) Continues improvement of the methodology through MUVEx and country implementation

4) Global report on the status of learning facilities worldwide

5

Final discussion

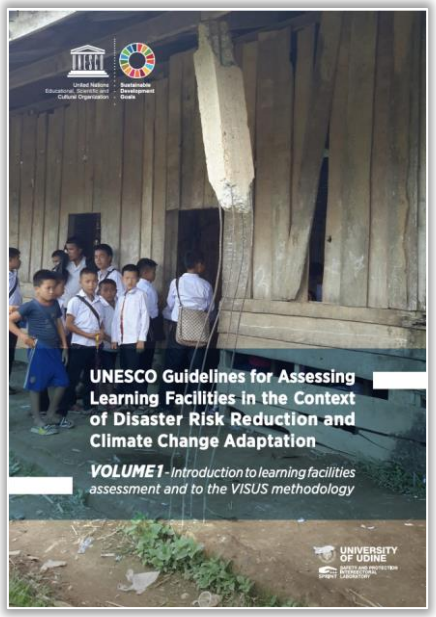
THANK YOU!

WE ARE ON THE FIELD

READY TO PLAY OUR ROLE

Looking forward

to receive your comments



VISUS FOR SAFER LEARNING FACILITIES

WHY

In order to ensure learning facilities' safety, decision-makers should be aware of:

- what is the **SAFETY SITUATION** of the learning facilities?
- **WHICH** schools need **PRIORITY INTERVENTIONS** and **WHY**?
- what types of **INTERVENTIONS** are needed?
- how much would the interventions **COST**?
- how can the level of risk be **COMMUNICATED** to the educational community?
- how to define an effective safety upgrading **ACTION PLAN** for a large number of schools?

United Nations Educational, Scientific and Cultural Organization

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VISUS
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HOW

Through the **UNESCO-VISUS** methodology that:

- assesses the safety situation for all relevant hazards and ordinary use (**MULTI-HAZARD**)
- evaluates the safety situation of a large number of learning facilities for the optimization of resources use (**TECHNICAL TRIAGE**)
- takes into account the local characteristics of the country (**ADAPTATION**)
- transfers the knowledge to local personnel (**TRAINING**)
- acquires information through rapid **SURVEYS**
- applies validated, uniform and rapid evaluations (**AUTOMATED** application of **PRE-CODIFIED** algorithms)

WHAT

The UNESCO-VISUS methodology provides an **OVERVIEW OF THE SAFETY SITUATION**, through:

- **GRAPHICAL INDICATORS** on safety assessment, safety upgrading needs, school characteristics
- **INDIVIDUAL REPORTS** comprising a technical description of outcomes for each school assessed
- **COLLECTIVE REPORT** presenting an overview of the outcomes for all the schools assessed
- **DATABASE** with all the outcomes (school characteristics and general information, safety indicators, intervention and resources needs)
- **MAPS** with the geolocation of each school and a summary of the outcomes

Capacity building

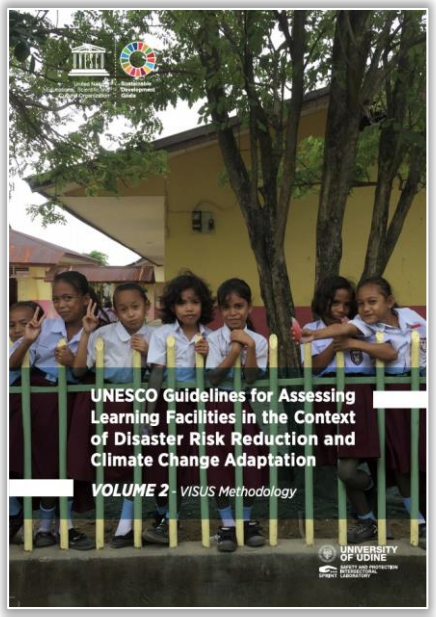
- Knowledge transfer to local personnel
- Involvement of local universities
- Creation and/or strengthening of competencies facilitating the project's deployment at the national scale
- Self-management of projects and applications

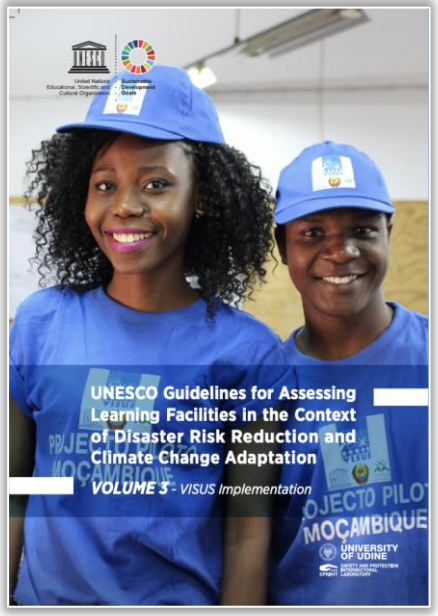
SUPPORT FOR SAFETY UPGRADING STRATEGIES DEFINITION

ACTION PLAN

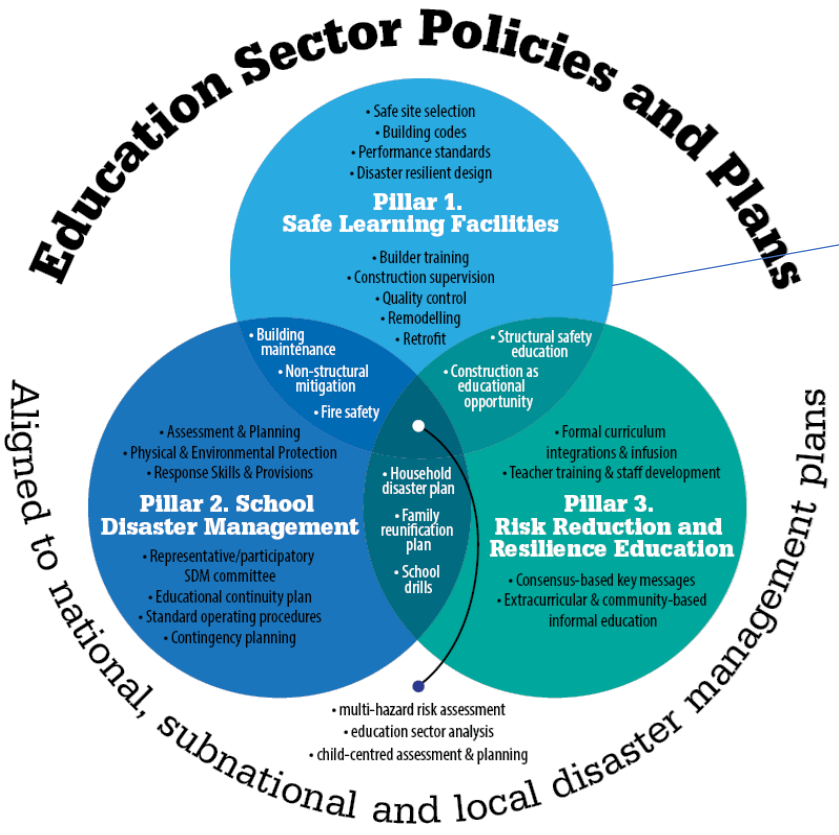
The outcomes of UNESCO-VISUS methodology enable decision-makers to develop various **SAFETY UPGRADING STRATEGIES**, such as:

- prioritization by exposure to a specific hazard or multiple hazards (considering also the ordinary use)
- prioritization by physical vulnerability
- prioritization by number of occupants
- prioritization by type of critical issue identified (e.g. structural critical issue, non-structural critical issue, problems of location)





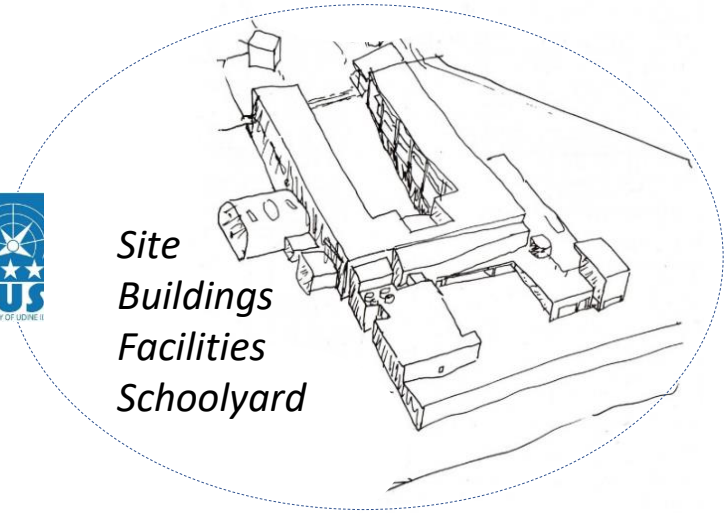
THE THREE PILLARS OF THE COMPREHENSIVE SCHOOL SAFETY



Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES)

Sendai Framework for Disaster Risk Reduction 2015-2030

PHYSICAL ENVIRONMENT



SAFETY GOALS

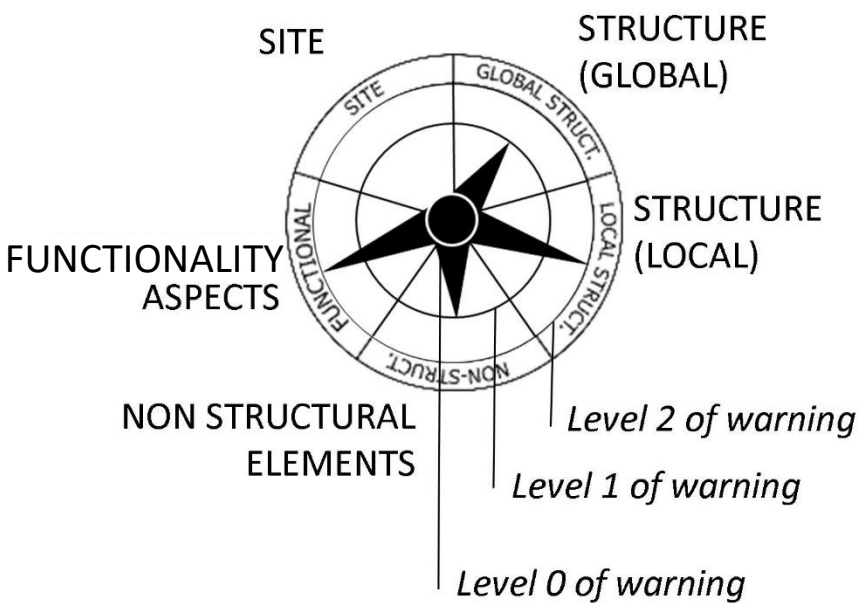
LIFE SAFETY
(CHILDREN)

CONTINUITY
(EDUCATION ACTIVITIES)

LOSS PREVENTION
(SAFEGUARD OF INVESTMENTS)

GRAPHICAL REPRESENTATION OF THE SITUATION

ROSE OF WARNING NEEDLES (INTERVENTION NEEDS)

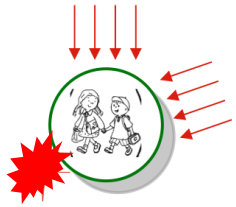


Level 0
No actions are needed
Absence of elements of concern

Level 1
Action is needed to avoid **difficult situations** for people safety

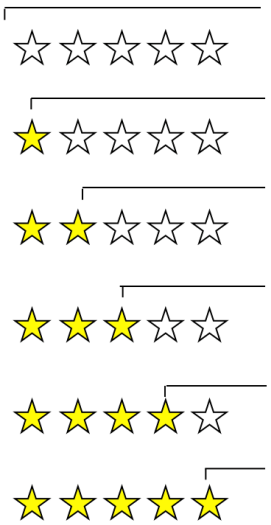
Level 2
Action is needed to avoid **heavy consequences** for people safety

GLOBAL SAFETY INDICATOR



GLOBAL JUDGEMENT ON SCHOOL FACILITIES SAFETY

Performance criteria for the progressive assignment of the safety stars (scenario-dependent)



Unsuitable site
(Level 2 of concern for site)

Suitable site
(absence of Level 2 of concern for site)

Stability of the building
(absence of Level 2 of concern for structural global)

Life safeguard
(absence of Level 2 of concern for all issues)

Rapid resume of operations
(absence of Level 1 of concern for structural global and local)

Immediately operational
(absence of Level 1 of concern for all issues)