

# "EXPERIENCES AND RESULTS PARTICIPATORY WORKSHOP ON SEISMIC RISK REDUCTION OF THE STUDENT POPULATION IN LIMA, PERU"

# **OBJECTIVES**

In the framework of social sustainability, the results of the workshop, applied with a participative and interdisciplinary methodology, are presented. These results will allow the design of integral solutions to reduce the seismic risk among the most vulnerable students which are socially innovative in terms of social inclusion as a main objective.

# THE PROBLEM

The Peruvian coast has a very high seismic risk. From 1970 to 2009 earthquakes approximately caused a \$29 000 million in economic loss in Peru. On the other hand, the country is committed to improve education which is one of the pillars of development. As a consequence, public education is a main issue for several industries and organizations locally and internationally.

Recent studies have shown high seismic risk in the infrastructure of schools in Lima. The necessity to keep operations going in schools makes it difficult to make general interventions in short periods of time. So far different government institutions have implemented solutions to specific problems due to temporary states of emergency. However, these solutions have been designed in an isolated and unarticulated way.

The government effort to mitigate seismic risk has not been enough due to the limited management capacity as well as the lack of suitable tangible and intangible resources.

#### **PUCP** Civil Engineering Risk management

## \_ SEISMIC RISK IN PUBLIC SCHOOLS IN LIMA

If there were an earthquake, 92% of schools would not be able to operate. The loss would be 11 times the emergency fund and this makes it impossible to establish suitable insurance policies.

# SPECIALTIES

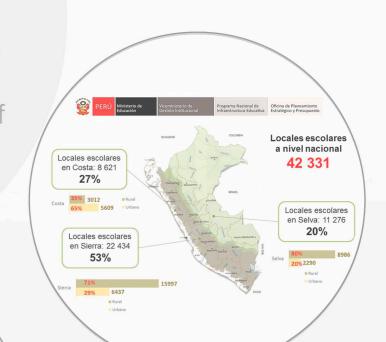
WHAT FACTORS SHOULD

BE TAKEN INTO

**ACCOUNT?** 

### \_SCHOOL INFRASTRUCTURE CENSUS (SIC)

In Peru 66% of schools must be rebuilt completely, 13% must be reinforced and 21% requires maintenance. In addition 73% of schools do not have legal clearing of property.



MINEDU

**PRONIED** 

La situación en un evento ocasional sería similar a la situación de Pisco después del sismo de 2007 (92%

inoperativos) y afectaría al 89% de los alumnos

**PUCP** Urbanism



 Structural factor • Type of soil

Student population

 Population density in schools

· Legal clearing of property



**MINEDU DRELM** 

# SCHOOL **URBAN ENVIRONMENT** FACTORS AND RISK **MANAGEMENT**

Risk management has to include factors of urban surroundings and landing in different stages. The variables issued have to include population density, socioeconomic income level and land use.

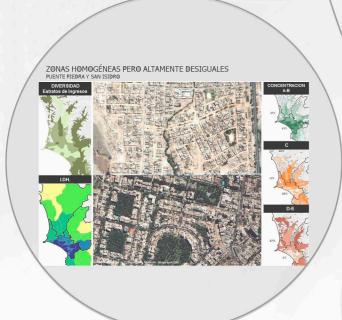
- Land use Surrounding
- zoning Socioeconomic
- levels
- Location Accessibility



- •Total area of schools
- Operations capacity of schools

### \_SAFE SCHOOLS IN METROPOLITAN LIMA

A program to improve capacities, preparedness and response towards earthquakes is being implemented in the schools of Lima. Likewise, the government is working on earthquake contingency plans in an articulated way.





- Community Organization
- Internal School Management
- Resilience of educators



 Functionality of facilities inside schools



**PUCP** 



**PUCP** Psychology

#### \_PSYCHOLOGY **BRIGADES**

A support group, pre and post disasters to help people with their mental health as a community and their strengthening of capacities as well as strategic alliances with social organizations.



A suitable emergency plan and response towards emergencies must consider issues related to location, school spatial scale and infrastructure and educational quality.





