



## **ENSURE PROJECT**

*Contract n° 212045*

# **ENSURE E-LARNING TOOL**

## **Sol06**

**Experience the sequence for the development  
of a vulnerability and resilience assessment**



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## Experience the sequence for the development of a vulnerability and resilience assessment

The main product of ENSURE Project is the integrated framework for vulnerability and resilience assessment

Look carefully at file F32 in module 2 and try to identify and shortly explain the steps of the assessment process by “commenting” all the slides one by one.

**Slide 1:** when a disaster occurs we absolutely need clear, well developed and shared method for damage assessment. To do this we suppose we have to develop methods able to forecast, at least in terms of dimensional scale, the damage impact on the territorial area concerned.

**Slide 2:** we know a lot of work has already been developed and the starting point of the ENSURE methodology starts from the existing. Still some topics call for a more deep analysis and some working dimensions like time, space or scale should be studied in greater depth for policy goals.

**Slide 3:** at least a part of the research work should focus on vulnerability in time and space, to deepen knowledge about the chain of effects of disasters in complex environments:

- at different distances from the disaster (space)
- during time from disaster to recovery through emergency
- affecting different territorial elements with different systemic impacts

**Slide 4:** the relationship vulnerability and resilience represents a key question within the Ensure Project. The methodological work aim at integrating different perspectives of vulnerability in order to enhance resilience: such a goal clearly requires to clarify how the two concepts influence or interact with each other. (See file F21 in module 2, chapter 1).

**Slide 5:** From the one hand, the proposed methodology is the result of a careful analysis of case studies in the field of hazard and damage assessment. From the other hand, the resulting methodology has been tested in case studies.

**Slide 6:** The figure shows in a synthetic way the ENSURE Project vulnerability and resilience assessment methodology. Find the description and the functioning elements of this *Framework for integrated multiscale assessment of vulnerability and resilience to natural hazards* in file F31 in module 2, chapter 2.2.

**Slide 7:** To develop the assessment process you need to create specific matrices and fill them with appropriate indicators to obtain a knowledge base. There are four different sets of matrices. Find the description and the functioning of the matrices in file F31 module 2, chapter 2.3.

**Slide 8/9:** Particular attention has been addressed to time and spatial scales as these have major impact on vulnerability and resilience assessment. Find a discussion on concepts in files F03, F04 and F05 in module 1. Find a discussion on the operational features in file F20 in module 2. Find experimental applications in the case studies in module 3.

**Slide 10:** More about the matrix system, which can be considered one of the core results/products of the ENSURE Project. In each matrix set emphasis is given on time and space matters.

**Slide 11/12:** Emphasis on the matrix organisation and on indicators selection, in order to underline and process in the best possible way the different components of vulnerability:

territorial exposed elements, territorial systems, aspects, assessment parameters, assessment criteria, descriptors and results when applying to a specific case study. Find the description and the functioning of the matrices in file F31 module 2, chapter 2.3. and the application into a case study in the same file, chapter 2.3.

**Slide 13/14:** The more specific goal of Ensure was to advance in the most “established” field of vulnerability assessment, providing an updated picture of what is already available in literature, in previous studies, and in applications worldwide. From a methodological point of view, the seismic case was selected as a reference example. In the latter in fact, methods for assessing buildings vulnerability to ground accelerations provoked by seismic waves at a given site have been developed for at least the last thirty year, producing results that are reasonably shared by the scientific community. See file F31 in module 2, chapter 2.1. From this first example the same approach can be applied to all types of hazards.

**Slide 15:** In ENSURE Project particular attention has been drawn to systemic vulnerability. See file F31 in module 2, chapter 1.2.1 for a brief description.

**Slide 16/17:** The knowledge building steps are crucial for vulnerability and resilience assessment. These activities are mainly based on the identification, selection and processing of indicators for each type of hazard, organised in matrices. These topics are well explained in files F27, F28, F29, F30 in module 2.