VESUVIUSPENTALOGUE

INTERDISCIPLINARY SCIENCE FOR DISASTER RESILIENCE AND SUSTAINABILITY OF POPULATIONS SURROUNDING VESUVIUS

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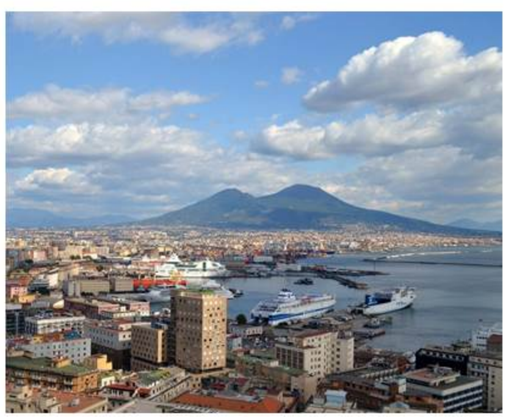
1

The current National Emergency Evacuation Plan for the population of Summa-Vesuvius area, which would create a massive dispersion all over Italy of the current 750,000 inhabitants living within the immediate danger zone of the volcano, is both problematic and unacceptable.

Further collaborative efforts (studies, discussions, workshops) among institutional representatives, scientists, as well as the communities at risk, are required, in order to:

- Select "temporary settlements" for some of these inhabitants within the areas much closer to their native homeland, until the volcanic crisis subsides;
- Minimize the effects of the eruptions on the built environment.



2

A continuing close habitation of the population with the volcano should be the crucial cultural point to be pursued, whenever possible, together with an overall risk reduction; this can be accomplished through a much more accurate identification of:

- Volcanic hazards (earthquakes, tephra falls, pyroclastic flows, bombs and missiles, mudflows, tsunamis);
- Vulnerabilities (civil construction practices, infrastructure systems, cultural patrimonies);
- Exposed values (with particular regard to people, strategic buildings, schools, heritage).

To achieve this identification, we propose the redefinition of the danger zone around Summa-Vesuvius as follows:

- **Exclusion nucleus** (*nucleo di esclusione*), prohibiting all future human settlements and discourage the existing ones;
- **Resilience belt** (*cintura di resilienza*), housing most of the current population, where:
  - All structures (new and existing) conform to specifically drafted construction codes based on maximum plausible seismic and volcanic actions scenarios;
  - Comprehensive "scenario evacuation plans" for the population within this belt can be implemented as backup strategies;
- **Sustainable area** (*area di sostenibilitá*) beyond the resilience belt, allowing for both sustainable practices and temporary resettlements of the "resilience belt" citizens; if this area is sustainable, it is consequently resilient to future eruptions.

These three zones should be urgently identified as follows:

- Activating further multidisciplinary studies, researches, projects, with the cooperation among International and Italian scientists, institutional representatives, and communities at risk;
- Enhancing the rule of law to fight illegality, guarantee the strict control of public money, foster the transparency of local administrators, ensure the effectiveness of emergency and risk mitigation strategies.

3

The built environment construction codes for the population of the danger zone should be established utilizing:

- Plinian eruption scenarios;
- Scenario-based seismic hazard assessment and zonation;
- Dynamic structural analyses;
- Global volcanic simulations modeling of thermo-fluid dynamic eruption processes.

4

The volcanic risk information and education should involve:

- An effective volcanic risk information campaign and active public preparedness strategy should be implemented for the exclusion nucleus, resilience belt, and sustainable area regions surrounding Summa-Vesuvius.
- A Volcanic Risk Education Safety Program should be implemented in all schools located within each of the above areas surrounding the volcano.

5

The political Authorities and the scientific community should produce:

- A "memorandum of understanding" that univocally establishes an effective collaboration;
- Periodic progress reports that keep the populations informed on the improvements leading to the realization of the above objectives.