FP7 2013 Cooperation Work Programme
Theme 6: Environment (Including Climate Change)

Novel indicators for identifying critical *INFRA*structure at *RISK* from Natural Hazards

INFRARISK Terminology

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1.0 INTRODUCTION

This document provides a glossary of terms sue dint he INFRARISK project. The purpose of this document is to ensure that all terms used in the project have a specific definition and all partners have a common understanding of the terms and their definition.

If requested, this terminology document will also be made available to the commission and those projects with which coordination is required, in order to ensure a common terminology is used between the various projects.

2.0 GLOSSARY OF TERMS

2.1 General Items

Term	Definition
Black Swan (Option 1)	An event for which no statistical distribution exists. It can be an event that occurred previously but never before occurred at an assumed low probability magnitude.
Black Swan (Option 2)	A hazard or hazard scenario that has not been modelled but if it occurs will result in higher consequences that anything else modelled
Consequence	The result of an event. It may be seen as positive or negative. It may or may not be directly monetisable.
Critical Infrastructure (EC)	An asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions
Critical Infrastructure (INFRARISK)	Elements of the Ten-T Core Transport Network such as for example, bridges, tunnels, earthworks and other structures (culverts etc.)
Critical infrastructure	Infrastructure that if non-operational would result in the occurrence of large consequences with a high probability.
Damage State	A state in which an object does not provide an adequate level of service
Disaster	An event that has large consequences. The definition of large consequences is dependent on the situation and stakeholders being considered.
Element at risk	An aspect of the system that plays a significant role in the determination of risk, e.g. if the variation of the number of persons living in an area has a large effect on the risk in the area, than this element of the system is considered to be an element at risk
Failure	The inability of an object to provide an adequate level of service, e.g. if an adequate level of service of a bridge includes having a safety margin of x and following an earthquake it has a safety margin of x -1 it has failed, or if an adequate level of service of a road section includes having no cracks and following a flood it has cracks, it has failed.
Fault	When an object does not work as intended it is said to have a fault, e.g. the bearing of bridge does not provide the lateral displacement it was intended to provide, or the steel of which a track is made does not have the specified yield stress. A fault does not mean that the object provides an inadequate level of service.
Hazard	Any event or a sequence of events that can lead to negative consequences. e.g. earthquake or earthquake which leads to ground accelerations which leads to physical damage of a bridge.

Term	Definition
Hazard scenario	A combination of multiple hazards that can lead to negative consequences, e.g. earthquake leads to ground accelerations and flood leads to high water levels, together they lead to physical damage of a bridge and a road section.
Objective probability	The probability determined using theoretical arguments or adequate statistical data.
Objective risk	An estimate of the risk obtained using theoretical arguments or adequate statistical data (for example the annual expected fatalities from car accidents) or from quantified risk analysis methods (QRA, PRA).
Probability	The likelihood or degree of belief of an event occurring.
Reliability	The ability of an object to provide an adequate level of service, e.g. fulfill code requirements, over a given period of time (e.g. design life).
Risk	The multiplication of the probability of occurrence of an event and its consequences for a given hazard, area and time period.
Risk management	The process of to evaluate and change risk
Safety	The state of having a low probability of being hurt or killed.
Stakeholder	An individual, group or organization that can affect, be affected by, or perceive itself to be affected by an event. (Within this project, stakeholders are the users of the INFRARISK Decision Support Tool.
Subjective probability	The probability determined using intuition and relevant experience.
System	A bounded group of interrelated, interdependent or interacting elements forming an entity that achieves a defined objective in its environment through interaction of its parts.
Trigger	An event, or multiple events, that cause another event or events to occur, e.g. a heavy rain fall event is considered to be a trigger, if it causes the occurrence of a landslide event.
Value at risk	The maximum consequences that can occur due to the occurrence of a hazard or hazard scenario, e.g. the maximum number of fatalities and the maximum number of building to be restored multiplied by the cost of restoring these.
Vulnerability	The risk related to a specific event or combination of events. It is seen as a subset of risk. For example, the vulnerability related to an earthquake occurring leading to a bridge collapsing is estimated assuming that an earthquake occurs and estimating the probability of the ground accelerations knowing that the earthquake has occurred and multiplying these probabilities with the probable consequences.

2.2 Risk Communication

Term	Definition
Acceptable risk	A level of risk, in which, society is not willing to execute interventions to reduce the risk. The acceptable level of risk depends on possible interventions and ability of society to execute an intervention. This is synonymous with tolerable risk. .
Interested party	Person or group having an interest in the performance of an organization. Examples: Customers, owners, people in an organization, suppliers, bankers, unions, partners or society.
Risk communication	The process of exchanging or sharing information about risk between the decision-maker and other stakeholders.
Risk perception	Way in which a stakeholder views a risk, based on a set of values or concerns.
Stakeholder	An individual, group or organization that can affect, be affected by, or perceive itself to be affected by, a risk

2.3 Risk Assessment

Term	Definition
Causal analysis	A process to describe and/or estimate the probability of the occurrence of precursor events, i.e. events that lead to other events or causes.
Consequence analysis	A process to describe and/or estimate subsequent events and setting a value to these events.
Hazard identification	A process to determine the hazards and hazard scenarios to be considered in an analysis.
Intervention analysis	A process to identify possible interventions to change risk.
Risk analysis	A process to estimate risk. Risk analysis is synonymous with risk estimation.
Risk assessment	A process to analyse risks and to determine the possible interventions to reduce risks. This may include the determination of the degree of risk acceptance. This is synonymous
Risk estimation	A process to estimate risk. Risk estimation is synonymous with risk analysis.
Risk evaluation	A process to analyse risks and determine the possible interventions to reduce risks. This may include the determination of the degree of risk acceptance. This is synonymous with risk assessment.
Sensitivity analysis	A process to describe and/or calculate the effect of variations in the input data and underlying assumptions in general on the final result

2.4 Risk Control

Term	Definition
Mitigation	A process of selection and execution of interventions to reduce the consequences of a particular event.
Residual risk	The risk remaining after an intervention has been executed to minimize risk or the decision has been made to execute no intervention to minimize risk.
Risk acceptance	A process of determining that no intervention should be executed to minimize risk
Risk avoidance	A process of not becoming involved in a situation, with which risk is associated.
Risk control	A process to ensure that the level of risk is acceptable/tolerable.
Risk financing	Financial resources secured to ensure that interventions to execute interventions to change risks.
Risk optimization	A process to minimize the negative risks.
Risk reduction	A process of selection and execution of interventions to reduce risks.
Risk retention	The decision that no intervention should be executed to minimize risk.
Risk transfer	A process of shifting the risk associated with one situation from one stakeholder to another.
Risk treatment	A process of selection and execution of interventions to change risk
Safety management	A process to ensure to that there is an adequate level of safety
Tolerable Risk	A level of risk, in which, society is not willing to execute interventions to reduce the risk. The acceptable level of risk depends on possible interventions and ability of society to execute an intervention. This is synonymous with acceptable risk.

