Conference poster

Breakthrough of the resemblances and correspondences between resilience and sustainability in civil infrastructures

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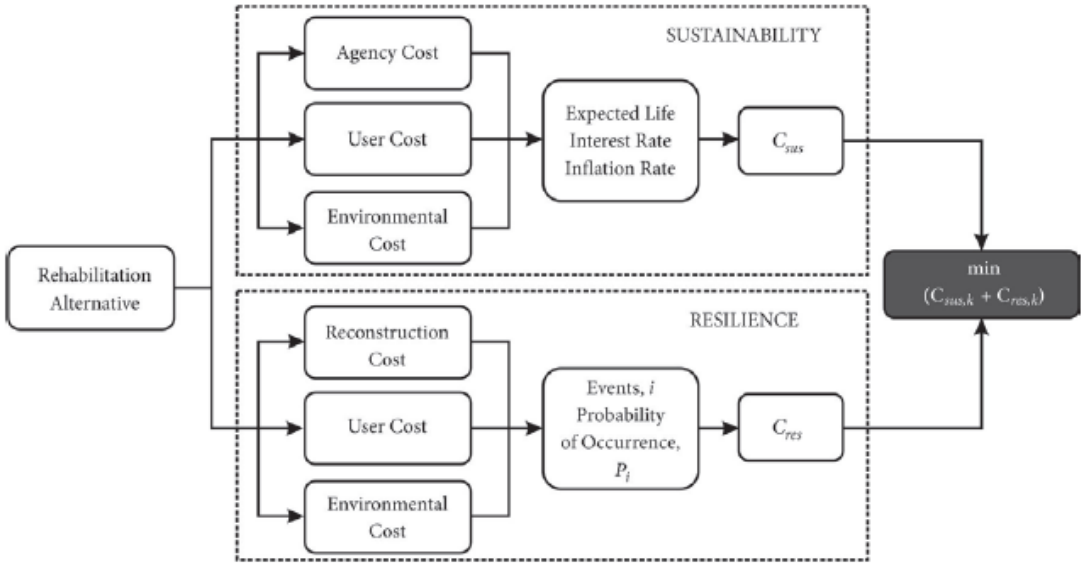
INTRODUCTION

Risk and Resilience analysis in Infrastructures

Taken from Marinella Giunta (2017) and Bocchini et al. (2014)

Sustainability in Infrastructures

- Leadership in energy and environmental design (LEED).
- Building Research Establishment Environmental Assessment Method (BREEAM).
- Sustainable building tool Portugal (SBtool PT).
- Life-Cycle Assessment and Life-Cycle Cost Assessment



Taken from Marinella Giunta (2017)

INTEGRATED APPROACH FOR CIVIL INFRASCTRUCTURES

- Markert et al. (2016) proposed, for the analysis of complex hydrogen infrastructures, a risk assessment complemented by GIS, LCA and LCC tools. These provides spatial analysis to identify vulnerable, high-risk and high economic and environmental impact zones.

- Bocchini et al. (2014) quantified the expected life-cycle impact of the infrastructure is quantified in monetary units through the sum of sustainable and resilience impacts.

- Marinella Giunta (2017) used a method based on life cycle costs to address sustainability and resilience for each solution of rehabilitation, identifying the alternative with the lowest total cost and high performance to perturbation in post-event life.

CONCLUSIONS

- The aspects associated with sustainability and resilience assessment are considered simultaneously and in a process of mutual interaction, opening the possibility to be used for planning and development of new cities, industries, and facilities as this comprehensive analysis is important for their continues optimization.
- Risk, resilience, and sustainability are complementary characteristics for civil infrastructure. While sustainability addresses the time-continuous impacts on the economy, society, and environment that the infrastructure certainly will distribute over its entire service life; resilience and risk focus on the big impact that the service failure of the infrastructure can have in the case of extreme events and its recovery.
- A big obstacle for the integrated assessment is the computation of truly quantitative metrics. The resilience research is more advanced in terms of quantitative analyses and indicators for civil infrastructures. Instead, sustainability assessment systems carry out qualitative assessments.

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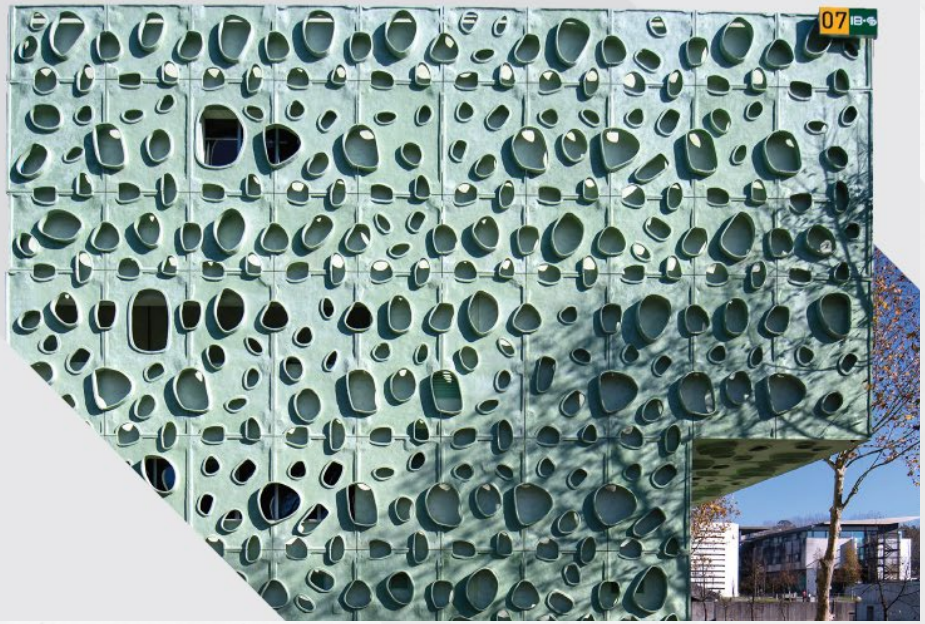

Thank you for your attention!

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You are invited

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