

Concluding Remarks to the IRGC Resource Guide on Resilienceⁱ

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The papers assembled in this resource guide collectively demonstrate the richness of the field of resilience. Each piece represents the independent views of the respective authors, including methodological and theoretical considerations of resilience from the perspective of various disciplines. The structure of this collection inherently allows for a comparison of perspectives on resilience analysis and theory, such as by Craig Allen and Allison Quinlan in the social-ecological sector, by Ivonne Herrera in the field of resilience engineering, by Henry Willis for infrastructure, or by David Woods and David Yu across systems and organisations. Other authors such as with Marcus Snell and Thomas Seager provide a multi-dimensional review of resilience. Finally, a number of papers illustrate resilience as it is currently applied, such as with the IBM scorecard or the 100 Resilience Cities programme.

This resource guide also aims to stimulate thinking about how and to what extent further work to structure the field of resilience would be necessary and helpful. At this stage, IRGC does not have an answer. However, we believe that the points raised below are important for consideration for the field of resilience as it continues to mature and develop:

- Resilience-building is a process that requires a multi-disciplinary perspective and the involvement of all actors potentially affected by a risk. Since it applies to systems, a system approach is generally required.
- Building resilience is important for systems potentially affected by uncertain yet potentially consequential shocks. Such shocks may be quite disastrous and affect the capacity of the system to deliver the critical services that humans need from it.
- Even though there are multiple schools of resilience applied in varying domains, there are common themes and features of resilience that include the necessity to focus on critical functions of the system, to assess degradation of these systems in time after disruptive event, to consider recovery, and finally the ability of the system to change or adjust based on experiences with dealing with emergencies
- Resilience quantification tools range from simple metrics up to advanced probabilistic tools and network science applications. There is a clear need to identify situations and application needs where one or another approaches may be useful. The tiered structure of resilience proposed by Linkov et al may be a good starting point to construct a taxonomy of resilience methods and applications
- There is substantial variance regarding scholarly views on the relationship between resilience and risk assessment. Approaches for consideration of risk as a part of resilience, resilience as a part of risk, and independent views on risk and resilience have all been proposed in individual papers and schools of resilience.

ⁱ This conclusion is part of the IRGC Resource Guide on Resilience, available at: <https://www.irgc.org/risk-governance/resilience/>. Please cite like a book chapter including the following information: IRGC (2016). Resource Guide on Resilience. Lausanne: EPFL International Risk Governance Center. v29-07-2016

- It is clear that resilience is a necessary and complementary component in and to risk management. Depending on the field, the approach could either start from (a) the need to build resilience, e.g. in a community that is affected by low-probability high-severity risk such as disaster risk from extreme weather or climate events, or (b) the outcome of a risk assessment, e.g. when the conclusion is that routine risk reduction strategies will not be sufficient, when strategies to avoid the risk are not possible or, when building robustness or resistance in the system is not sufficient.