

# Methodological approach

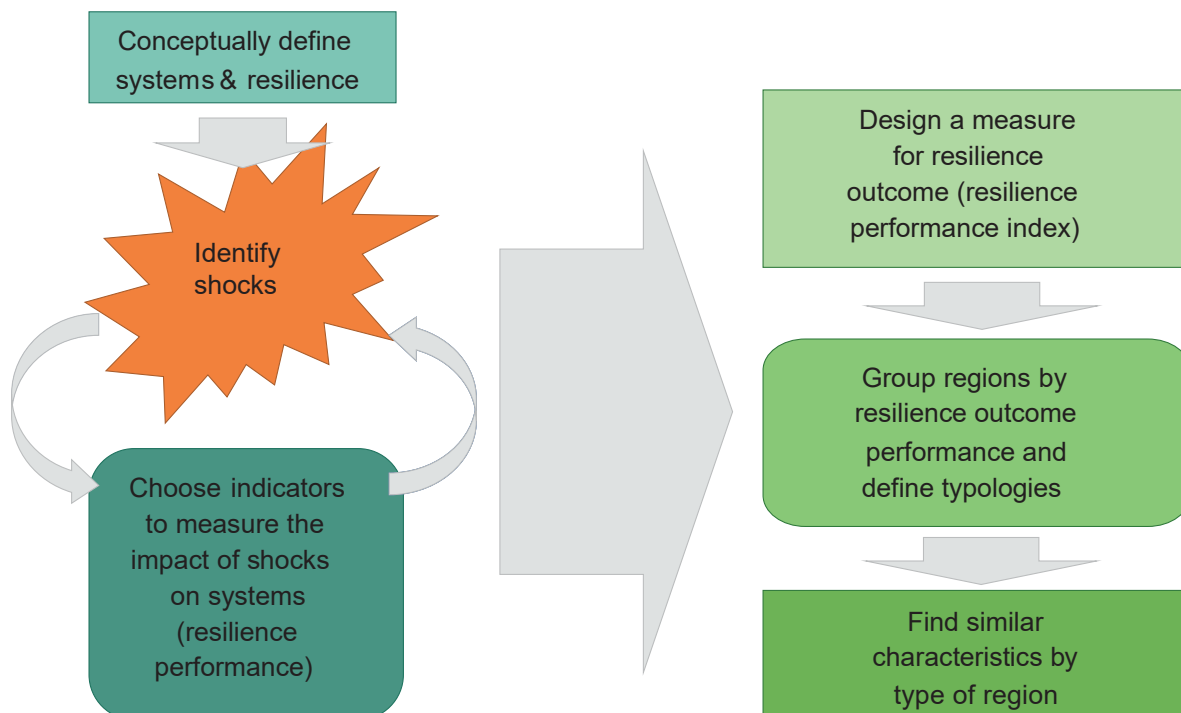
The methodology employed for studying resilience seeks to overcome the existing limitations in the literature regarding the assessment of resilience and addresses the absence of an integrative resilience model that encompasses a mixture of internal and external factors. Therefore, the analysis aims to provide a systemic understanding of regional development in the EU, by using a multidimensional and multilevel approach. Specifically, the methodological framework relies on the following stages:

## 1. Defining the systems (the subject of the analysis)

First and foremost, the system of analysis must be defined, thus establishing whose resilience is evaluated. Following a hierarchical structure, a system is defined for each of the dimensions analysed (society, economy, environment, institutions, democracy), while more subsystems were considered for some of them.

## 2. Designing the conceptual framework of resilience (the object of the analysis)

The common theoretical framework for resilience assessment relies on a two-stage approach which includes both the capacity of the system to resist to shocks (resistance stage), as well as its aftermath dynamics (recovery stage). Based on this framework, resilience is specifically defined for each of the systems considered.



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### 3. Finding the main indicators for measuring the resilience performance of systems

Once both the systems and resilience have been conceptually defined, the most appropriate indicators were selected, as derived from the scientific literature, to assess the systems' performance in the wake of shocks.

### 4. Identifying the main shocks which affected the system

Identifying the shocks which impacted the systems allows a more specific assessment of how systems performed. The current analysis is mostly focused on the shock induced by the Great Recession, as it had wide geographical diffusion and affected all the systems considered which allowed us to perform a comparative analysis across regions/countries.

### 5. Measuring the resilience of the systems and computing the resilience performance index

The resilience performance is measured for each of the subsystems considered by computing the slope for both resistance and recovery periods and by aggregating them into a resilience performance index. The evolution at the EU level (EU average) for each of the indicators is analysed for delimiting a specific timeframe for both resistance and recovery stages, for each of the subsystems. The components were aggregated into a resilience performance index, while the weights applied were computed following the OECD methodological framework (Nardo et al., 2008).

### 6. Resilience capacity analysis: empirical testing of the potential drivers and designing a resilience capacity index

This stage aims to explain the different performance across systems and regions in the aftermath of the selected shocks. Therefore, a model is designed for explaining the resilience performance index computed in the previous stage by testing the significance of different drivers. Once the importance of the drivers has been validated, the resilience capacity index is designed following the same methodology proposed by OECD (Nardo et al., 2008). In contrast to the resilience performance index (which can only be calculated in the aftermath of shocks), the Resilience capacity index, as it has been empirically confirmed to be relevant in explaining resilience at the time of the shocks, can be computed annually. It thus helps to monitor the vulnerability of the systems and can contribute to the orientation of regional policies.

