

# Group C-1 | Plan Integration for Resilience Scorecard™ for Multi-hazards Approach.

In many parts of the world, climate change is exacerbating already-worrying trends of many natural hazards, including frequency, magnitude, and, in the case of some hazards, duration. The result is not only increasingly detrimental impacts, but also increasing exposure to more than one type of hazard (Liu et al., 2016). Worse still, these multiple hazards can occur in close proximity—in both spatial and temporal terms. While hazard effects can be independent of each other, in many cases interactions and compounded consequences – potentially even exhibiting a one-plus-one-greater-than-two pattern – can result (Liu et al., 2016). Recognizing such potentialities, scholars and many authorities have been increasingly calling for research that goes beyond single hazard events to take into account multiple relevant hazards.

It has been increasingly recognized among planning and disaster scholars that plan integration – the extent to which the ecosystem of planning documents is consistent for a particular goal (Yu et al., 2024) – can play a substantial role in strengthening community resilience to natural hazards and its absence can weaken it. Given the severe impacts of multi-hazards and the potential of plan integration to relieve them, it is critical that planners take hazard resilience into account. Yet, despite the growing scholarly attention to multi-hazard approaches and plan integration, no process has emerged regarding how to evaluate plan integration in the context of multiple hazards. This study addressed this gap by extending the Plan Integration for Resilience Scorecard™ method to encompass multi-hazards. We demonstrate the novel PIRST™ for multi-hazards approach in Beaumont, Texas, by simultaneously evaluating the community’s network of plans for three hazards: flooding, wildfire, and extreme heat.

Results show that the areas highly exposed to multiple hazards mainly cluster along the Neches River. Encouragingly, the disaster- and infrastructure-oriented plans, such as Beaumont’s Emergency Management Plan, are well-integrated for vulnerability reduction in most cases, thus strengthening the community’s resilience toward multi-hazards. However, the development-oriented plans, such as Beaumont’s Development Strategies Plan, contain a considerable number of policies that exacerbate hazard vulnerability which, taken together, can overwhelm the more limited resilience-boosting policies and weaken the community’s multi-hazards resilience.

Such knowledge is significant for planning practitioners since it enables the continuous tracking of their performance regarding multi-hazards plan integration. It also helps identify policies that contribute to integration and those that work against it. These can, in turn, support practitioners in refining their plan networks to more effectively strengthen community multi-hazards resilience.



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