# Engaging Citizens in PPGIS to Develop Solutions for Disaster Recovery

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Impacts from hazardous events are often felt the most in communities that have long been the victims of economic and social discrimination which makes it harder for them to prepare for, respond to, and recover from environmental threats. There is a need for cost-effective tools for decision-makers that allow for data-driven decision support that includes the community voice in the planning process. We aim to enhance community resilience, empower stakeholders, and contribute to more equitable and effective adaptation efforts.
In these projects we utilize a public participatory geographic information science (PPGIS) approach. PPGIS is defined as, “a field within geographic information science that focuses on the public uses of various forms of geospatial technologies to participate in public processes, such as planning and decision making," (Tulloch, 2008). PPGIS research is applied in nature, focusing on a need to identify spatial information potentially useful for planning and decision support. PPGIS goes beyond state-of-the-practice for community engagement –it is unique in its integration of geographic information systems technology with active involvement and collaboration from the public. Inherent in the PPGIS process is an emphasis on active participation and collaboration between the public and decision-makers, involving the community in various stages of the process, such as data collection, analysis, and decision-making, empowering the public, and enhancing the democratic nature of decision-making.
Our overall goal is to help communities across the globe prioritize adaptive strategies for specific geographic locations that will have the potential to make communities more resilient to extreme events. We believe our approach of combining scientific data with community input ensures the community will be better prepared to implement projects that enhance and protect the most vulnerable yet valuable spaces in their communities. Outcomes from our projects will guide decision making by providing local government agencies and non-profit organizations with additional criteria to identify and rank suitable areas to implement adaptive strategies. Our work involves two key objectives:
(1) Evaluating work completed in prior scientific efforts and integrating them with rankings of landscape use, values, and risk perceptions obtained using a PPGIS methodology with local community members, and
(2) Analyzing the uses, values, and risk perceptions data elicited during the PPGIS surveys to identify and prioritize areas of highest use, value, and accessibility within communities for the implementation of disaster adaptation strategies.
We believe this process will be successful for important topics such as: earthquakes, heavy rain events/storm surge/flooding; erosion/loss of sand; landslides/slope failures; water quantity and quality issues; sea-level rise; drought; wildfire; biodiversity/habitat loss; food supply; local citizen’ s physical and mental health; vector-borne diseases; equity and justice.
Two PPGIS projects are currently in progress: (1) engaging communities in developing climate change solutions to address impacts from recent severe storms in western North Carolina, USA, and (2) engaging citizens in developing solutions for recovery from the 2024 earthquake on the Noto Peninsula, Japan.
Our rationale for using this unique approach is based on the recognition of the disproportionate impact of hazardous events on marginalized communities, the need for inclusive decision-making, the innovative potential of PPGIS methodology, and the importance of localized disaster adaptation strategies that reflect community values. We believe that increased community resilience will lead to improved health outcomes, enhanced social equity, strengthened community connection, more effective policy innovation

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and learning, and long-term sustainability.

Keywords: adaptation, hazard planning, landscape values, Noto Peninsula, participatory mapping, resilience

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