

INPLASY

Asset-Challenge Shifts of Rural and Remote Communities in the Global Context of Climate Change: A Scoping Review through the Natural-Built-Social-Environment Triangulation

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INTRODUCTION

Review question / Objective The objectives of this project are to (1) Synthesize the current knowledge of climate change and climate-induced disaster-driven (CCCID-driven) impacts within the natural-built-social-environment triangulation of rural and remote communities that reshape their assets and challenges; (2) Identify research gaps among the existing rural and remote community studies focusing on CCCID-driven asset-challenge shifts associated with rural and remote communities' natural, built, and social environments; and (3) Inform practice and policymaking by providing critical information and evidence-based strategies that build CCCID-specific resilient and sustainable rural and remote communities.

Background Climate change and climate-induced disasters (CCCIDs) are among the most pressing and prevalent threats facing the world today.

CCCIDs and CCCID-driven disasters have disproportionately impacted rural and remote communities and been drastically devastating to the natural environment, built environment, and social environment within the communities, placing the communities' unique assets—such as their place-based knowledge and culture, localized community bonds, and stunning environmental landscapes—at substantial risk. The changes in the natural-built-social-environment triangulation have had many short-, medium-, and long-term effects. These effects corrode the assets of rural and remote communities, leaving them vulnerable and marginalized. This marginalization ultimately reduces rural and remote communities' capacity to mitigate, prepare for, respond to, adapt to, and recover from CCCIDs, affecting their residents' overall health and well-being.

Rationale CCCIDs and their impacts have been reducing rural and remote communities' existing assets, threatening the natural-built-social-

environment triangulation, and increasing rural and remote communities' adaptive challenges to CCCIDs. However, the identification and synthesis of these CCCID-driven impacts within the triangulation of rural and remote communities remain unclear. This deficit has marginalized rural and remote communities and jeopardized rural and remote community dwellers' health and well-being. Therefore, there is an urgent need to comprehensively identify, synthesize, and understand CCCIDs and rural and remote community-associated knowledge, strategies, and outcomes in the natural-built-social environment triangulation to effectively build their resilience and adaptive capacities.

METHODS

Strategy of data synthesis This project uses the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guideline to comprehensively identify and synthesize the state-of-the-art CCCID-driven knowledge, practices, and policies that address the asset-challenge shifts within the rural and remote communities' natural-built-social-environment triangulation.

Six multidisciplinary academic databases have been chosen to comprehensively identify publications, especially in the social sciences, humanities, and environmental sciences. The chosen databases include EbscoHost, Embase, ProQuest Central, PubMed, Scopus, and Web of Science.

Three groups of subject matter keywords have been created to search for relevant publications. Keywords are:

(1) Climate Change and Climate-Induced Disaster: "Climate" OR "Disaster*" OR "Heat Wave*" OR "Earthquake*" OR "Extreme Temperatur*" OR "Hurricane*" OR "Flood*" OR "Drought" OR "Wildfire*" OR "COVID-19" OR "Climate Change";

(2) Rural and Remote Communities: "Rural" OR "Farm*" OR "Agricultur*" OR "Remote communit*" OR "Town*" OR "Village*" OR "Tribe*" OR "Nonmetropoli*" OR "Migration*" OR "Agrarian*";

(3) Triangulation: "Natural Environment" OR "Built Environment" OR "Social Environment".

The operator "OR" for within-group keywords and the operator "AND" between each group have been used to search for all related literature. The research team further filtered publications by year (2013-2023) and language (English). Where applicable, the research team also used the search functionality to search titles, abstracts, and keywords to limit the results to the most relevant publications.

Eligibility criteria Inclusion and exclusion criteria: (1) The publication includes an examination of Rural Communities/Populations, Remote Areas, Small Towns, Villages, Tribal Communities or Farming Communities as the focus of analysis within the context of CCCID and the natural-built-social environment triangulation.

(2) The publication describes the strengths and/or deficits of CCCID and rural and remote communities research, to advance research, practice, and policy that may identify the shifting nature of assets and challenges within rural and remote communities in the context of CCCIDs and the triangulation.

(3) The publication focuses on contributing rural and remote community-led and/or -informed policy and decision-making that promotes community and societal well-being, resilience, and sustainability.

Source of evidence screening and selection

The screening and selection followed a two-step screening process: (1) title and abstract screening and (2) full-text screening. The research team screened the identified publications in the initial dataset by their titles and abstracts. The team established criteria associated with the three primary research objectives to assess the publication's eligibility and suitability for analysis. To reduce potential biases or screening mistakes, publications were screened by two members of the research team independently. A third researcher was responsible for resolving the disagreements.

Following the title and abstract screening stage, the full-text review of each publication was undertaken independently by two researchers. At this stage, the two researchers thoroughly examined the publication's strengths and deficits through clearly defined inclusion and exclusion criteria. A third researcher was responsible for resolving the disagreements. The team had full-team discussions to address the disagreements.

Data management Publications identified by the initial search were uploaded to COVIDENCE for (1) title and abstract screening, (2) full-text screening, and (3) extraction. Two researchers independently screened titles and abstracts and then reviewed the full-text of each publication. The two researchers deeply examined each publication using inclusion and exclusion criteria, and disagreements were resolved through a full-team discussion.

Reporting results / Analysis of the evidence The research team implemented a mixed-method approach for data analysis. Specifically, the team utilized quantitative univariate analysis and

qualitative thematic inquiry to identify, synthesize, and analyze the results and offer recommendations. Four research team members independently and collectively conducted each analytic approach, and full-team meetings were conducted to resolve any disagreements in the analysis process. In addition, full-team meetings were utilized to administer recommendations based on the entire analysis.

Univariate analysis was used to analyze the frequency and provide descriptive data based on the dataset. The type of rural community, type of hazard, and study location, etc. were analyzed to evaluate the current research landscape of CCCID impacts on rural and remote communities within the natural-built-social environment triangulation.

Two researchers conducted a thematic analysis to complete the qualitative portion of the research. Since the overarching goal of this project is to identify CCCID knowledge related to rural and remote communities within the natural-built-social environment triangulation, the triangulation served as the initial qualitative thematic categories that guided the coding process. The two researchers conducted deductive coding and developed sub-themes within each larger category independently, before discussing and finalizing the sub-themes. Following deductive coding, the researchers used inductive coding to build out the sub-themes accordingly to provide rich, descriptive data analysis of the publications.

Presentation of the results PRIMSA-ScR Flow Diagram is used to present the search and screening process and results. Analytic charts and graphs are used to show the frequency and descriptive data based on the entire dataset after the quantitative univariate analysis.

Language restriction English.

Country(ies) involved Canada.

Keywords climate change and disasters; rural and remote communities; natural-built-social-environment triangulation; climate change adaptation; disaster risk reduction; resilience; sustainability.

Dissemination plans The research team has planned three knowledge mobilization activities to enhance benefits to research, non-academic knowledge users, and other related stakeholders. First, advancing academic research and beyond: this activity has three distinct components, including (1) training seed persons, (2) open-access data and publications, and (3) multi-stakeholder conference presentations. Second,

informing non-academic stakeholders: this activity will engage the non-academic sector and stakeholders in the dissemination and mobilization process through three parts, including (1) a short animation video, (2) a one-page infographic, and (3) a project webpage. Third, advancing research uptake: the team will share project outcomes with their networks and connections to advance the uptake and further mobilization of the project findings.

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