# Research Summary Brief:
# Group Concept Mapping and Equitable Resilience in Southern Africa

## Background

The concept of resilience has faced criticism for not adequately addressing differential vulnerability and issues related to social justice, equity, and inclusion (Evans and Reid 2013, 2015, Leitch and Bohensky 2014, Bourbeau 2018). "Equitable resilience" has emerged to acknowledge that vulnerabilities and capacities are unevenly distributed across societies (Matin et al. 2018). Most research on equitable resilience originates from the Global North, with limited studies focusing on developing countries and the Global South. This research aims to fill that gap by exploring equitable resilience within the context of Southern Africa. With approval from several institution's research ethic committees a mixed-methods exploratory pilot study was conducted using Group Concept Mapping (GCM) to holistically and contextually examine equitable resilience in this region. Context of Southern Africa in relation to equitable resilience

## Context of Southern Africa in relation to equitable resilience

This study aims to conceptualize equitable resilience locally within the context of Southern Africa. The region significantly contributes to our understanding of resilience and equity, making it crucial to examine the resilience agenda amidst its social, economic, and political disparities (Rodina et al., 2017). Southern Africa faces severe inequality, small and poorly diversified economies, and widespread poverty, with nearly 45 percent the population living on less than one US dollar per day (UNECA, 2012; Davis and Vincent, 2017). The region is highly vulnerable to climate-related hazards, which exacerbate existing vulnerabilities such as poverty, inequality, and limited resource access, disproportionately affecting marginalized communities (David and Vincent, 2017). Climate change is predicted to further impact this region, despite Africa being the second-lowest net anthropogenic greenhouse gas emitter per capita (IPCC, 2023). Increased heat extremes, heavy precipitation, and drought events negatively impact water scarcity, crop production, livestock health, malnutrition, and ecosystems (IPCC, 2023). Additionally, stark gender differences result in inequitable health outcomes and impact disaster risk reduction efforts (MacPherson et al., 2015; Chineka et al., 2019; Myeni and Wentink, 2021).

Given these ongoing and impending challenges, exploring resilience and equitable resilience is essential. This study aims to

1) conceptualize and contextualize equitable resilience in the Global South, specifically Southern Africa, and

2) contribute to the limited empirical literature on equitable resilience

This research summary brief gives an overview of the method and application to Southern Africa.

### Key Insights

**Our research indicated that social justice approaches, development, legislation and policies, collaboration and co-creation, capacity building, inclusion and participation, transformative change, preparedness measures, and mitigation and adaptation strategies all contributed to the conceptualization of equitable resilience within this context.**

## What is Group Concept Mapping?

GCM is a participatory research method that combines qualitative and quantitative approaches to capture a group's collective ideas on a topic.

### Steps of Group Concept Mapping:

**Brainstorming:** Participants generate statements related to a specific prompt.

**Sorting:** Participants organize these statements into piles based on conceptual similarities.

**Rating:** Participants evaluate the statements on various scales.

**Data Analysis:** The sorted and rated data are analyzed using multidimensional scaling and cluster analysis to create visual maps that represent the group's collective thinking.

GCM is particularly valuable for exploring complex constructs as it incorporates diverse perspectives and systematically structures them into coherent, actionable insights.

### Why is GCM Important?

GCM provides a structured yet flexible approach to understanding and organizing complex, multifaceted concepts by integrating the perspectives of diverse stakeholders. The participatory method is significant for several reasons:

**Inclusive Participation:** It allows diverse groups to contribute their perspectives, ensuring a comprehensive understanding of complex issues.

**Structured Process:** The method provides a clear, systematic way to gather and analyze complex information.

**Visual Representation:** It translates abstract concepts into visual maps, making it easier to understand relationships and priorities.

**Actionable Insights:** GCM identifies key themes and areas of consensus, which can inform decision-making and policy development.

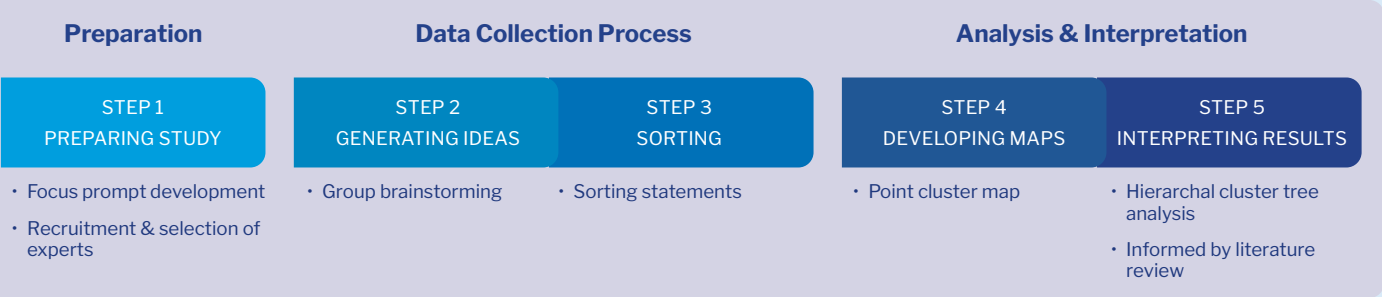| Preparation | Data Collection Process | | Analysis & Interpretation | |
|---|---|---|---|---|
| STEP 1 PREPARING STUDY | STEP 2 GENERATING IDEAS | STEP 3 SORTING | STEP 4 DEVELOPING MAPS | STEP 5 INTERPRETING RESULTS |
| · Focus prompt development<br>· Recruitment & selection of experts | · Group brainstorming | · Sorting statements | · Point cluster map | · Hierarchal cluster tree analysis<br>· Informed by literature review |

*Figure 1. Methodology overview*

# Applying GCM to Understand Equitable Resilience in Southern Africa

**Objective:** To explore how experts in Southern Africa define and perceive "equitable resilience."

## Recruitment and Participation Challenges

Recruiting participants from the Southern African Development Community (SADC) region presented several challenges:

**Small Expert Pool:**
Resilience and equity are somewhat niche fields in and of themselves making the intersection of these even more niche. There are relatively few experts globally, fewer locally, and even fewer willing to participate in all phases of the research.

**Technological Barriers:**
Many participants struggled with the GroupWisdom platform, particularly on smaller devices like phones, which hindered their ability to fully engage in the sorting activity.

**Cognitive Demands:**
The sorting task was complex, akin to coding or thematic analysis, and required significant cognitive effort.

**External Factors:**
Frequent power outages (load shedding) in the region interrupted participation. Additionally, without financial incentives, participation rates were lower compared to contexts like the U.S., where compensation for time is standard practice.

Despite these challenges, a subset of participants completed the activities, providing valuable data for analysis.

## Data on Perspectives of Equitable Resilience in Southern Africa

**Defining Equitable Resilience:**
Participants responded to the prompt, "Equitable resilience in my community would look like...". This prompt yielded 67 statments, see Word Clouds, which were subsequently cleaned for conceptual clarity and singularity. This cleaning process ensured that each statement conveyed a single idea, facilitating easier sorting and rating. The cleaned statements were then verified through member checking to maintain the integrity of the participants' original inputs.

The responses highlighted unique perspectives from Southern Africa, emphasizing the region's distinct cultural and social dynamics.

Statements made included:

*'...an ubuntu interconnectedness where the community has a chance to perceive challenges together and look for a cohesive solution."*

*'...allowing the disadvantaged, marginalized, and powerless to actively, and collaboratively, participate and respond to challenges affecting them."*

*'...changes in power relation that shapes up social and economic contexts and entitlements."*
*'...inclusion in decision-making processes determining the community's future."*

Figure 2. Word clouds of statements made defining equitable resilience

focus on mutual responsibility
having equal rights for all
targeted interventions for vulnerable groups
an ubuntu interconnectedness where the community has a chance to perceive challenges together and look for a cohesive solution
sustaining and developing the well-being of individuals, families and groups

Social Justice Approaches

justice in distribution of resources
allowing the disadvantaged, marginalized, and powerless to actively, and collaboratively, participate and respond to challenges affecting them
collective and informed response to socio economic challenges unique to the community context

fairness
mainstream gender and social inclusion
communities embracing their lived experience as something that can inform change processes
utilizing a social justice perspective

developing poverty reduction strategies
access to disaster risk management initiatives for all

locally relevant and contextually just social systems crafted to advance sustainable social and economic development
equal access to prepare for and recover from challenges
access to mental health resources

communities realising their power
Development sustainablility

inclusive disaster policies
better implementation of existing legislation
access to community facilities
a change in different structures, such as the political, social, and cultural components of a community

Legislation & Policies
legislative understanding of disaster management
responsive early warning systems
basic security for all in the community

everyone taking responsibility
Disaster Information Management Frameworks and infrastructures

Collaboration & Co-creation
everyone, including vulnerable groups, having the ability to withstand shocks
social cohesion

participative and collaborative development approach
inclusion in decision making processes determining the communities future

the ability to make decisions and act on them
community led disaster management approaches
all participants/groups contributing as active citizens to respond to socio economic challenges

access to a high standard of education for everyone
focusing on capacity building
healthy ecosystems
Capacity Building

enhancing disaster preparedness and response capacity

enhanced inclusion and representation

fairness in distribution of resources

# Inclusion & Participation

equal access to diverse resources (e.g. knowledge, finance, nature, political and social capital)

a multi-sectoral approach    inclusive disaster programmes    inclusive coordination

changes in power relation that shapes up social and economic contexts and entitlements

people and communities self-actualising (e.g. becoming one's best self, flourishing, achieving one's best)

empowering people and communities

## Transformative Change

empowering individuals and communities to grow and learn from shocks/disruptions

conducting capacity assessments

leaving no one behind in development

transformative change for all, including last mile (i.e. forgotten) communities

prompt disaster assistance (when needed)    strengthening disaster management capacity

communities being able to access and use their natural resources to strengthen their livelihoods

institutional arrangements for disaster management

good clear communication

enhancing disaster risk reduction    access to knowledge and information

conducting vulnerability assessments

## Preparedness Measures

flood risk insurance

reliable community infrastructure

enhancing disaster risk reduction

more than adaptation

bouncing back (speed of recovery from a disaster)

enabling the community to safely navigate stressors and hazards

enhancing climate change mitigation    flood reduction measures

mitigation processes

enhancing climate change adaptation

## Mitigation and Adaptation Strategies

the development of inclusive and just socio-economic systems for climate adaptation

reducing vulnerability

unity building of all service users in the community

## Sorting and Rating

The next phase involved participants sorting the statements into piles based on conceptual similarity, followed by rating each statement on how well it represented equity and resilience. These activities were conducted online using the GroupWisdom platform, which, despite its advantages in reach, posed several challenges due to technological access issues and the cognitive load of the tasks. These challenges ultimately lead to only 10 participants completing the sorting activity.

## Analysis – GCM Methodology Explained

The analysis involved several sophisticated statistical techniques to interpret the sorted and rated data. Maps played a crucial role in the analysis and visualization of data, providing a clear and intuitive way to understand complex relationships and themes betwCeen different statements.

2. **Similarity Matrix:** Participants sorted statements into piles based on conceptual similarity. Each sorting was recorded in a similarity matrix, which is a binary symmetric matrix that indicates how frequently pairs of statements were sorted together (Kane & Trochim, 2007).

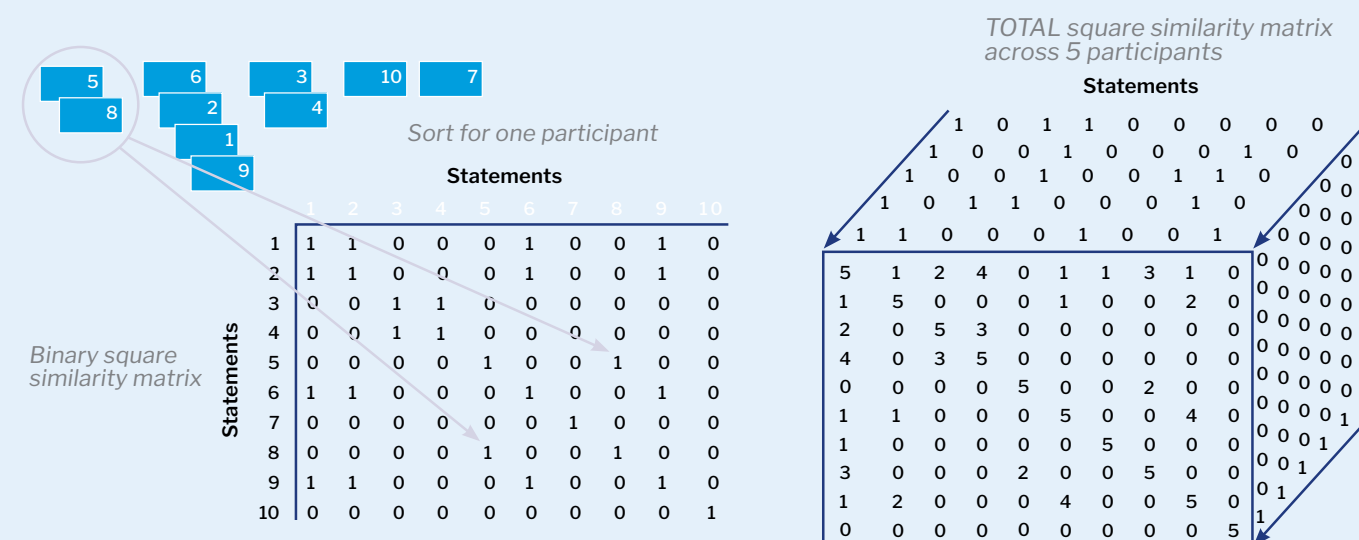The similarity matrix provided the foundational data for subsequent analyses.



Figure 3. Similarity Matrix Example. Source: Kane & Trochim, 2007

2. **Multidimensional Scaling (MDS):** The similarity matrix was subjected to MDS, which plotted each statement on a two-dimensional plane (Kane & Trochim, 2007), where statements frequently sorted together appeared closer to each other, visually representing their conceptual proximity. This point map, with X and Y coordinates reflecting the relational positioning of statements, helped identify clusters of related concepts and facilitated the understanding of how different ideas were connected.
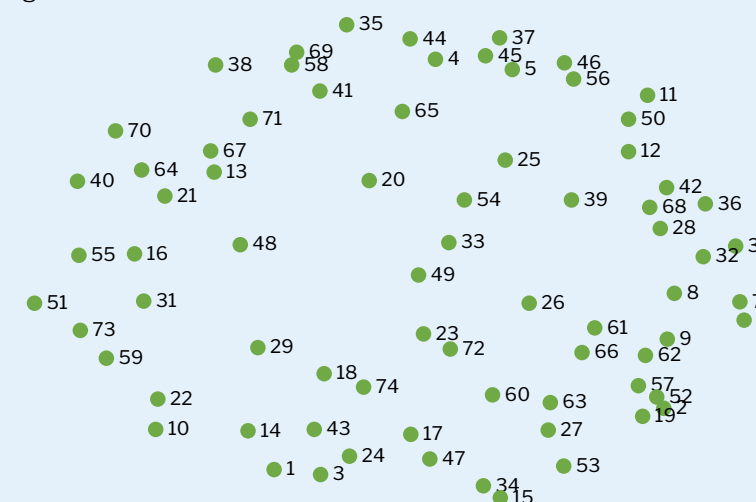


Figure 4. Point Map

3. **Hierarchical Cluster Analysis:** The point map from the MDS was analyzed using hierarchical cluster analysis, which suggested various ways to group the statements into clusters based on their proximity on the map (Kane & Trochim, 2007).

Researchers explored several cluster solutions, including 8-cluster and 9-cluster maps, to identify the most meaningful divisions. The optimal number of clusters was determined based on conceptual coherence and interpretability.

Each cluster represented a distinct theme or aspect of equitable resilience, such as social justice approaches, legislative and policy frameworks, collaboration, capacity building, inclusion, transformative change, preparedness, and mitigation strategies.
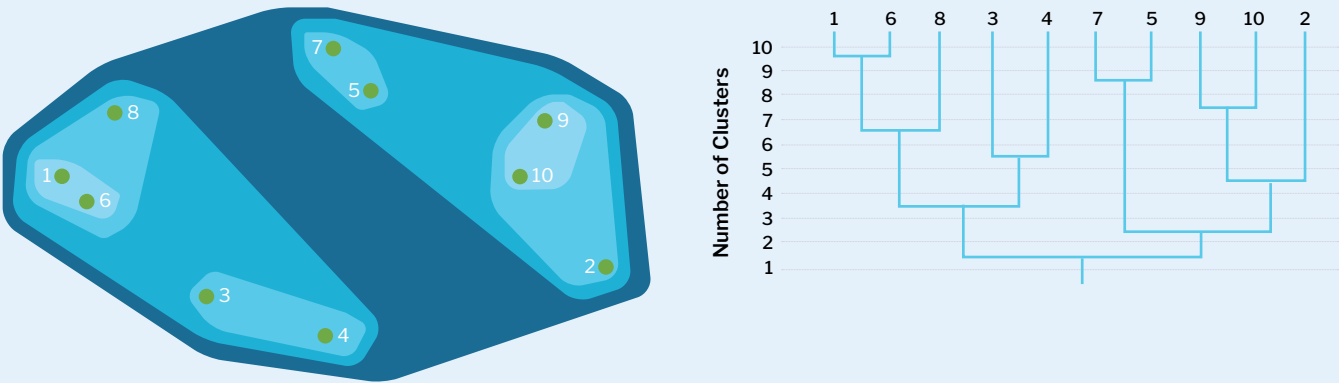


Figure 5. A hypothetical 10-statement point map showing all cluster solutions (top) and Hierarchical Cluster Tree (bottom) with the Three-Cluster Solution Highlighted. Source: Kane & Trochim, 2007

4. **Naming Clusters:** Clusters were named by reviewing the statements within each cluster and considering participant-suggested labels and overarching themes. This process ensured that each cluster name accurately reflected the content and themes of the statements it contained, incorporating participant suggestions and maintaining conceptual clarity.

5. **Rating Analysis:** Participants rated each statement on scales for equity and resilience. These ratings were used to identify "go-zones," which are areas in the cluster map where statements rated highly on both scales intersect.

Go-zone analysis helps identify key statements central to the concept of equitable resilience within the Southern African context. Although the small sample size (6 participants for equity rating, 5 for resilience rating) limited interpretative power, it highlighted the potential for identifying central themes with larger sample sizes. The go-zone maps identified the most important and relevant concepts according to participants, providing actionable insights for policy and practice.
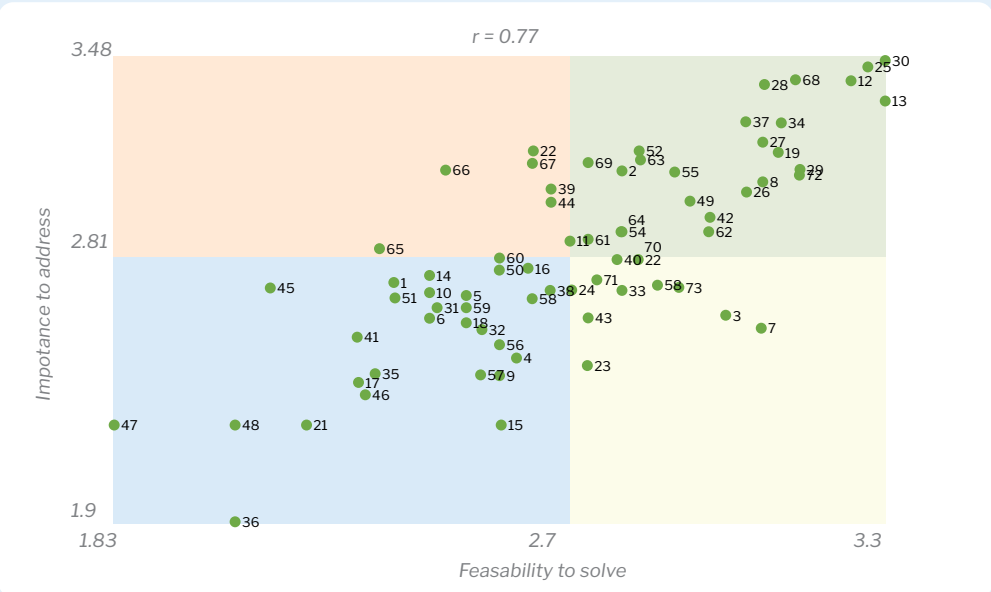


Figure 6. Example Go-Zone chart from CEDR's group concept mapping study exploring barriers to recovery showing average importance and feasibility to address

6. **Pattern Match Analysis:** Pattern match analysis compared average cluster ratings on both equity and resilience scales, illustrating which clusters were more critical to equitable resilience. Although the small sample size limited definitive conclusions, this analysis demonstrated the methodology's potential. Pattern match maps provided a visual comparison of different themes, helping researchers see which clusters were most representative of equitable resilience and aiding in the interpretation of results.



This methodology allows you to capture both the granular data of individual statements and the group's collective thinking. It also blends qualitative and quantitative data in powerful ways that can lead to fruitful preliminary exploration of complex constructs.
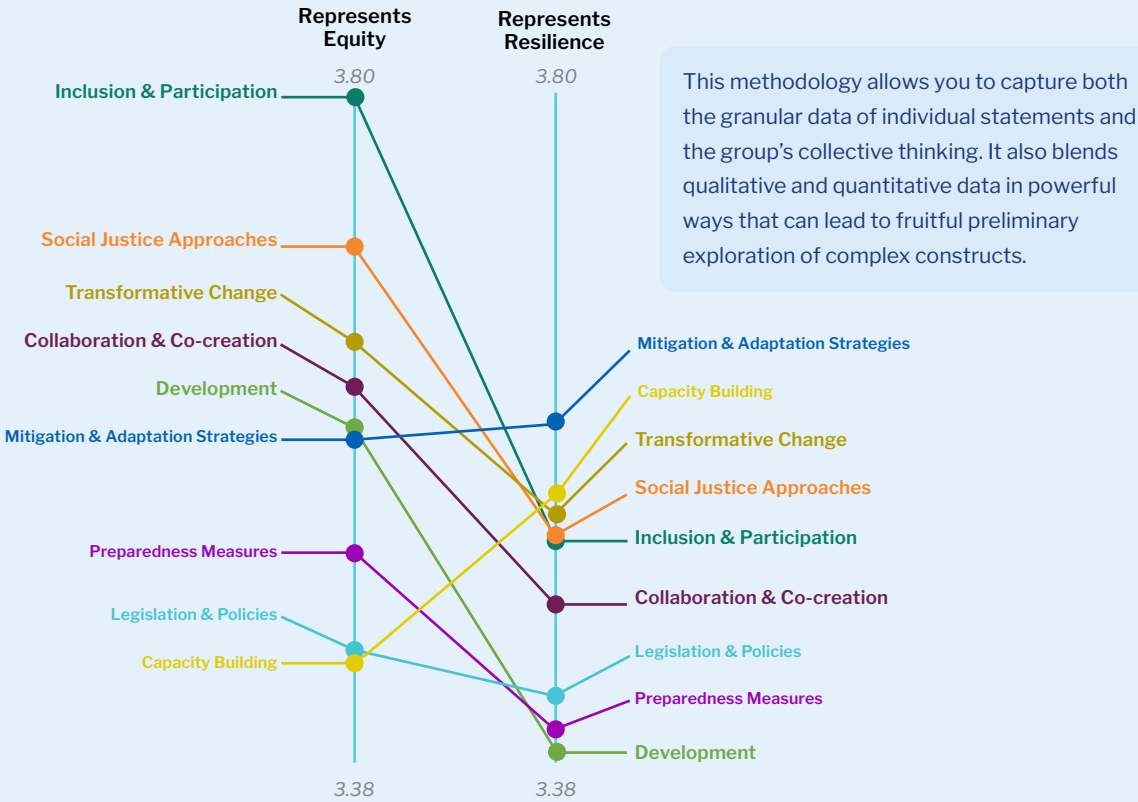
Figure 7. Equity and Resilience Cluster Pattern Match

Ultimately, a cluster map with nine distinct clusters was selected for its conceptual clarity (see Figure 8). This map visually represents how participants' statements about equitable resilience in Southern Africa are grouped based on their conceptual similarities. The clusters were formed through a systematic process involving sorting, multidimensional scaling, and hierarchical cluster analysis.
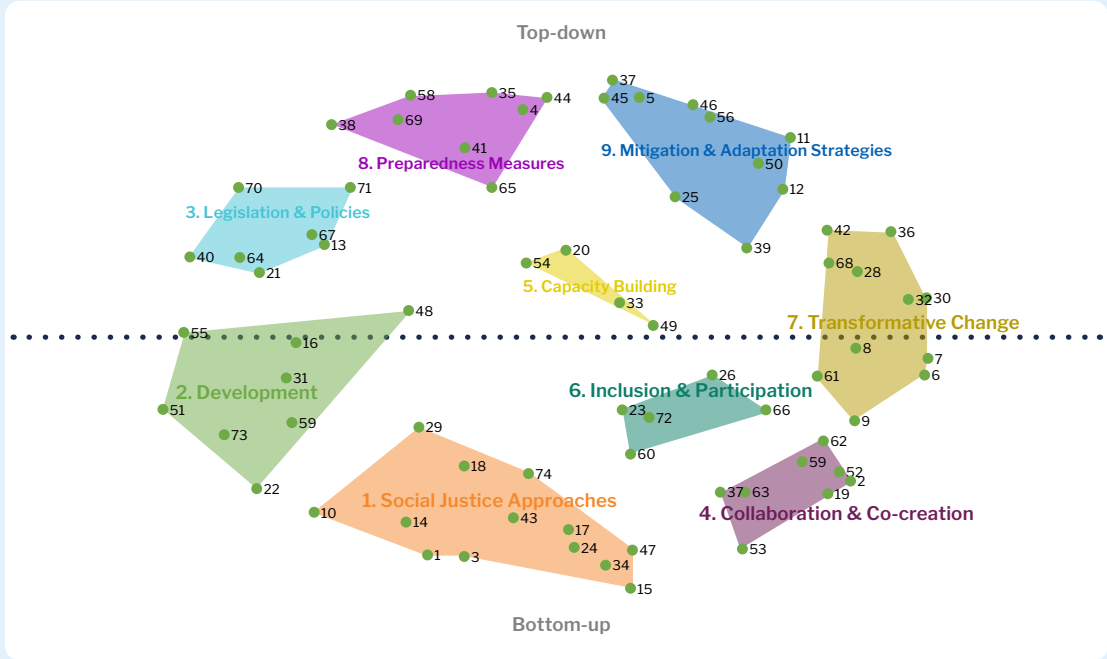


Figure 8. 9-Cluster Map

The maps highlighted several key themes central to equitable resilience in Southern Africa:

- **Social Justice Approaches:** Addressing historical and systemic inequalities to ensure fairness in resilience efforts.

- **Development:** Fostering economic and social development to enhance the resilience of communities.

- **Legislative and Policy Frameworks:** Developing and implementing policies that support equitable resilience.

- **Collaboration and Co-creation:** Engaging communities and stakeholders in resilience planning and implementation.

- **Capacity Building:** Strengthening the abilities of individuals and communities to respond to and recover from adverse events.

- **Inclusion and Participation:** Ensuring all community members, especially marginalized groups, have a voice in resilience initiatives.

- **Transformative Change:** Promoting significant shifts in systems and structures to support long-term resilience.

- **Preparedness Measures:** Developing strategies to prepare for and mitigate the impacts of future disasters and climate change.

- **Mitigation and Adaptation Strategies:** Implementing actions to reduce vulnerability and enhance adaptive capacity.

## Insights and Challenges from Rating Data

The rating data provided additional insights into which statements were considered most representative of equity and resilience. However, the small sample size and the tendency of participants to rate most statements highly limited the interpretative value of the ratings. Despite this, the process underscored the potential of GCM to identify significant themes and foster a deeper understanding of complex constructs like equitable resilience.

# Key reflections

The application of GCM in this study successfully identified key factors and themes relevant to equitable resilience in Southern Africa. The methodology's ability to capture and analyze diverse perspectives was particularly valuable in a region characterized by significant socio-economic and environmental challenges. The findings emphasize the need for inclusive, context-specific resilience strategies that address the unique vulnerabilities and capacities of communities in Southern Africa. Despite the challenges in recruitment and participation, the study demonstrates the power of GCM to generate comprehensive, actionable insights that can inform policy and practice in the region.

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# SARA's work towards building equitable resilience in Southern Africa

Since 2022, the Southern African Resilience Academy (SARA) has supported collaborative working groups to pursue inter- or transdisciplinary synthesis research under the guiding theme of "**Building equitable resilience in Southern Africa**".

This is in line with SARA's role as a convening and support space for researchers and practitioners working across Southern Africa to engage around pressing resilience and development challenges in the region.

SARA is an initiative of the Global Resilience Partnership (GRP), with support from the Swedish International Development Cooperation Agency (Sida). The academy's goals are to strengthen existing expert networks, expand collaboration, and facilitate the co-production of policy and practice-relevant knowledge.

Through its links with other regional networks, SARA aims to contribute directly and meaningfully to regional and global policy discussions around resilience and development, and elevate the Southern African voice in international fora.

SARA is coordinated by the Centre for Sustainability Transitions (CST) at Stellenbosch University in South Africa. It is co-funded by the South African Research Chair in Social-Ecological Systems and Resilience.

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## WORKING GROUP:
## Disaster risk: Towards equitable resilience in Southern Africa

This working group critically examined the concept of resilience, which has faced criticism for its oversight of differential vulnerability and neglect of issues related to social justice, equity, and inclusion. In response, equitable resilience has emerged as a vital notion recognising that vulnerabilities and capacities are unevenly distributed in societies. With a notable increase in disaster-related events in Southern Africa, there is a pressing need for a nuanced understanding of achieving equity, particularly among the most affected. However, research on equitable resilience has predominantly originated from high-income countries, leaving a gap in its conceptualisation within the context of developing countries, specifically the Global South. This project aimed to bridge the gap by engaging in a series of activities, including an advanced mixed-methods pilot study that utilized group concept mapping. Through these endeavours, the aim was to holistically explore equitable resilience in a contextually grounded manner, shedding light on the construct within the specific context of Southern Africa (SADC).

### Working group members included:

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