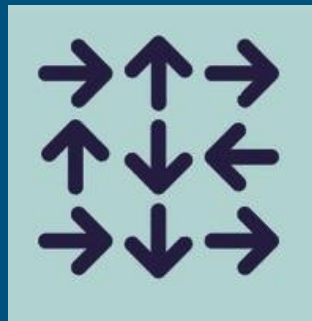
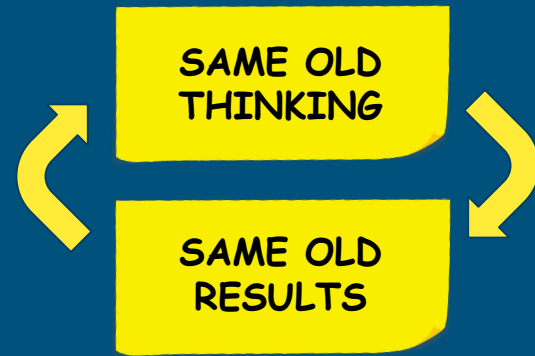


Using a Collective Impact Framework in SZ4D to Build Equity and Capacity with Geoscience



Building Equity and Capacity with Geoscience Integrative Group



GOAL: Transform the mindset of our community to embrace education, outreach, international partnerships, BAJEDI, and social science as critically important for the success of SZ4D

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Equity in Hazard Mitigation

Interdisciplinary Collaboration

International Capacity Building

Improving Outreach Effectiveness

Education and Training Strategies

Belonging, Access, Justice, Equity, Diversity, Inclusion

Key Questions

- What strategies for outreach would enable the general public to better understand geohazards and risks associated with them?
- How can SZ4D become an exemplar for interdisciplinary efforts to enable equity-oriented collaborations and outcomes in community science?
- How can we leverage efforts into equitable international capacity building partnerships that improve capabilities for all scientists and stakeholders involved?
- How can improved understanding of subduction zone geohazards be used to address social justice and equity issues in hazard mitigation?
- How do we implement educational efforts that are more inclusive and have measurable student learning outcomes to equip and diversify our community?
- How can SZ4D be designed as a community science project to achieve a transformative increase in BAJEDI in the geoscience community?

Traceability Matrix Approach

A quality control strategy to ensure system being built meets the requirements proposed in advance

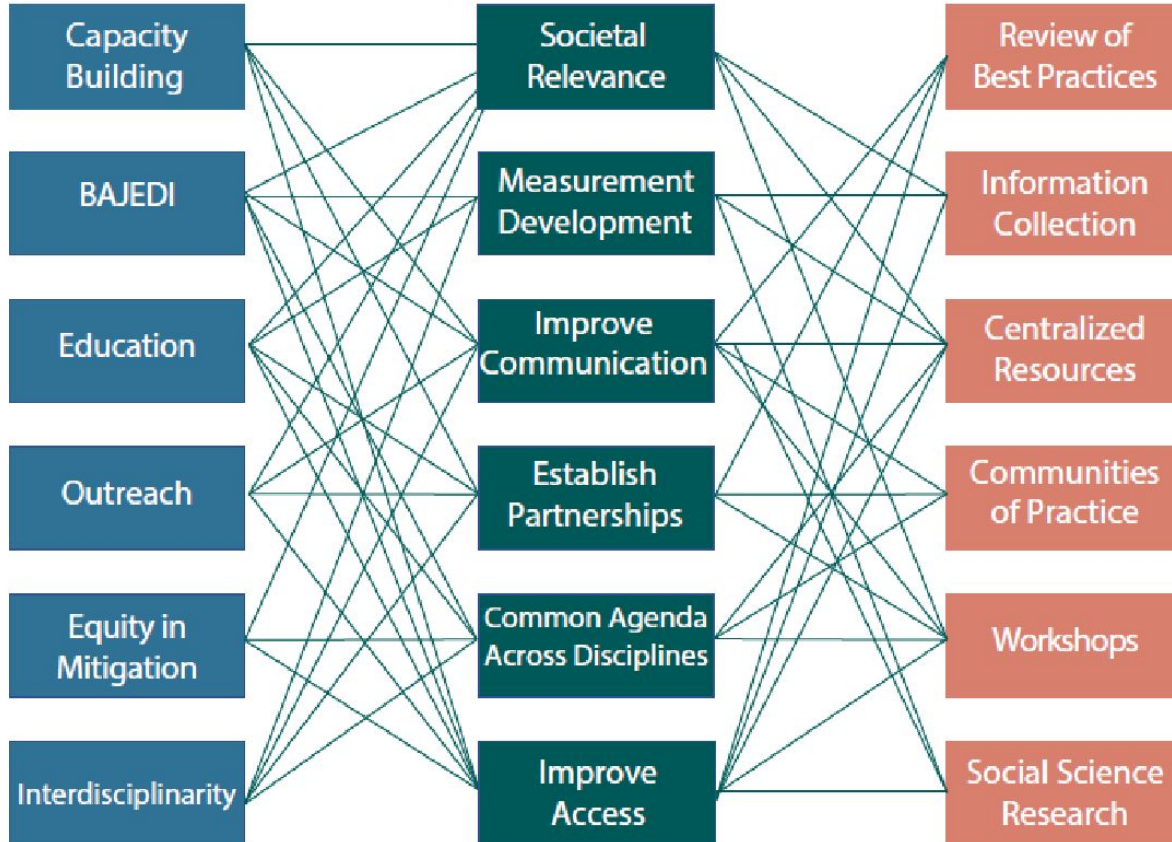
Each component of SZ4D has used this to identify relationships between goals, needs, & activities

QUESTION / GOAL	OBJECTIVE	SPECIFIC NEEDS	ACTIVITIES	
Geoscience has lagged behind other disciplines in terms of diversity, equity, inclusion (and justice) - What can we do to enact transformative change in the geoscience community?	Take advantage of changing demographics to increase pool of diverse students and faculty in geoscience	Lack of sense of belonging	Create cohort of students and faculty from diverse backgrounds - fund research opportunities (see below), hold skills workshops (see below), hold receptions at all meetings. Create travel fund for 30 students and 5 faculty per year to attend traditional conferences (e.g., AGU, SSA, etc.), including conferences that serve diverse students (e.g., SACNAS, AISES, NABG) Focus on creating welcoming environment through receptions at meetings for affinity groups Create strong mentoring program for new students attending meetings Create receptions for alumni of SZ4D programs at conferences	
		Lack of access to geoscience programs for minority populations	Provide research opportunities for 30 undergraduate students per year from community colleges, HBCUs, HSIs, and TCUs, plus 5 faculty from these MSIs. The research opportunities could be traditional summer opportunities but also extend throughout the year, requiring a significant mentoring component. Provide monthly, virtual skills workshops for students and faculty to participate in all activities, and extending these to face-to-face training at selected conferences.	
		Need to develop skills for students to learn teamwork	Actively seek partnerships with MSI faculty to participate in science through travel scholarships for 5 faculty per year to attend specific SZ4D science and training meetings or workshops.	
		Lack of formal relationships with MSI faculty to increase talent pool	Create two faculty-in-residence or faculty exchange programs per year (possibly one semester or a year) where an SZ4D scientist may reside at an MSI and/or visa versa.	
	Build mutually beneficial network/partnership of minority serving and research institutions	Weak links between minority serving and research institutions	Develop a plan to engage MSI leadership and faculty through invitations to meetings and on-site visits. The goal will be to develop tailored MOUs with MSIs to conduct research related to SZ4D through a long-term effort built on mutual trust and commitment. Ensure that there is a point person or group within SZ4D to build and sustain these relationships.	
		Minority populations are in community college and MSIs	Develop MOUs specifically with Community Colleges using strategies outlined above.	
	Promote rigorous science through changing science culture to value diverse perspectives	Need diverse perspective to ask and solve science questions (who is at the table impacts what questions get asked)	Weak links between minority science organizations	Regularly attend (booth) and develop programming (sessions) at science organizations focused on minority students and professional (SACNAS, AISES, NABG, etc.) Solidify with MOU after a demonstration of commitment. Ensure that there is a point person or group within SZ4D to build and sustain these relationships.
			Actively recruit diverse scientists and faculty from MSIs to be integral to science planning and activities (research, panels, leadership). Engage input from MSI scientists from the beginning of projects, including research design as well as data collection and analysis.	Create interdisciplinary, diverse teams to address a specific science task, problem, or research plan. The teams meet together once for 5 days, then then meet annually at a conference. Target two teams/problems to be address per year.
			Create a publication platform (newsletters) that address the innovations and successes from a diverse research team. The publication could incorporate interviews or reflections of participating scientists about the value of collaboration among diverse scientists and the challenges and opportunities to implementing and sustaining such collaboration.	Create 2 workshops per year that address scientific bias, using teams of faculty and students to address specific science goal Encourage education researchers to participate in SZ4D BAJEDI activities, carving out some initial funding to study extant research and analyses of SZ4D implementation to inform SZ4D educational practices that broaden participation
	Increase geoscience literacy of diverse communities	Minority communities not engaged in science Environmental and natural hazards can impact minority communities	Develop College Day and invite local communities in for a day of activities at an annual conference.	

GOALS

NEEDS

ACTIVITIES



Commonalities and Connections

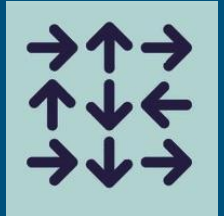
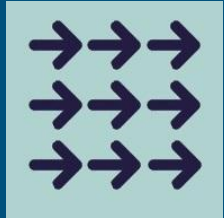
Common Themes in Addressing BECG Questions

- Much can be learned from modern social science research
- Opportunity to break out of stovepipes (disciplinary, project design, funding sources, etc.)
- Need to reject relic habits (e.g. colonial approaches)
- Centering the needs of collaborators and stakeholders in an evolving landscape
- Mechanisms needed to coordinate this ambitious and expansive effort with a rigorous SZ4D science plan

Framework to Accomplish BECG Goals:

Collective Impact

- **Collective Impact** is the commitment of people from different sectors to a common agenda for solving a specific social problem, using a structured form of collaboration (Kania and Kramer, 2011; 2013)
- **Isolated Impact** results from grantors supporting proposals that promise the greatest impact with the least resources over a short time frame
 - Minimal lasting effects on communities due to short-term focus and cheap cost that does NOT match the pace and cost of institutional change
 - Motivates PIs to focus on distinguishing their efforts from others instead of coordination and cooperation



Five Criteria for Achieving Collective Impact

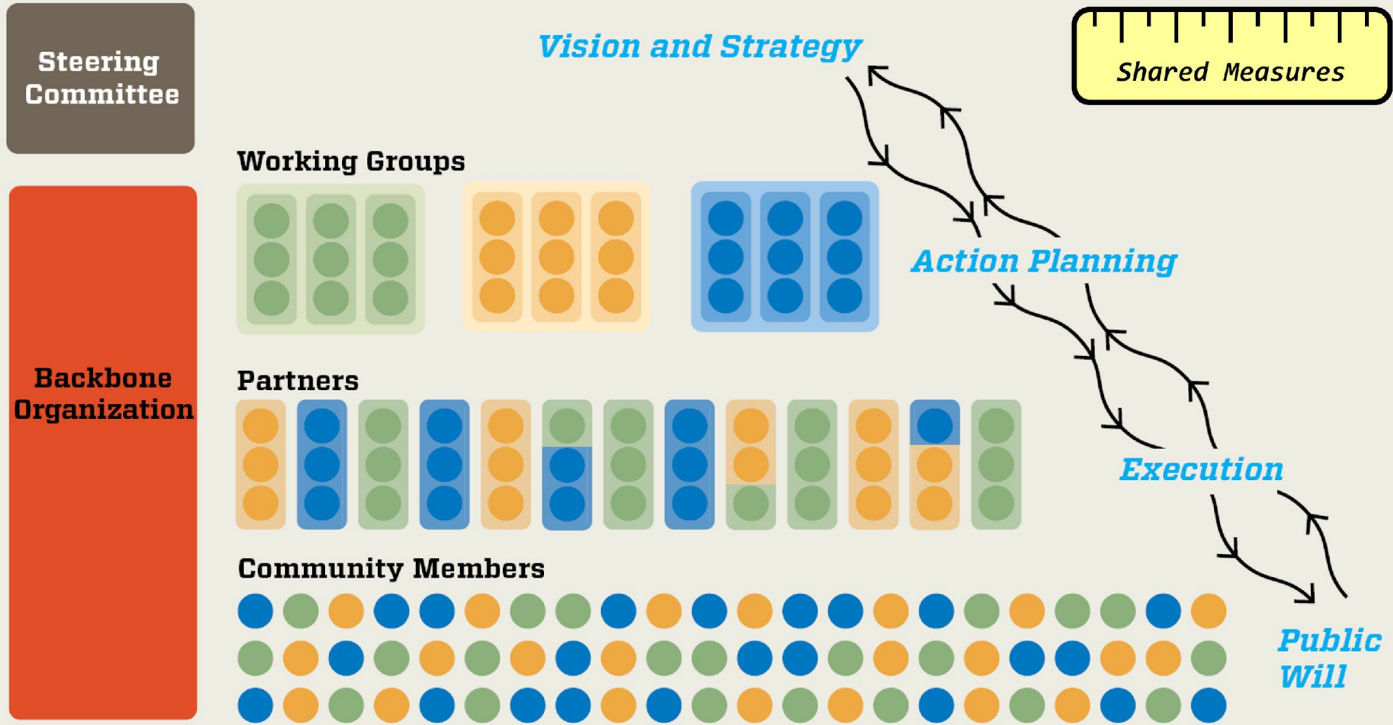


Advantages of Collective Impact

- Novel approach that is appropriate for the scale of a collaborative and community-oriented activity, like SZ4D
- Encourages everyone to have skin in the game
- Provides guardrails for advancing work
- Recognizes that the organization must have dedicated staffing support
- Can and should be implemented in a manner that discourages top-heaviness

Cascading Levels of Collaboration

COMMON AGENDA



Feedback from the Community and NSF

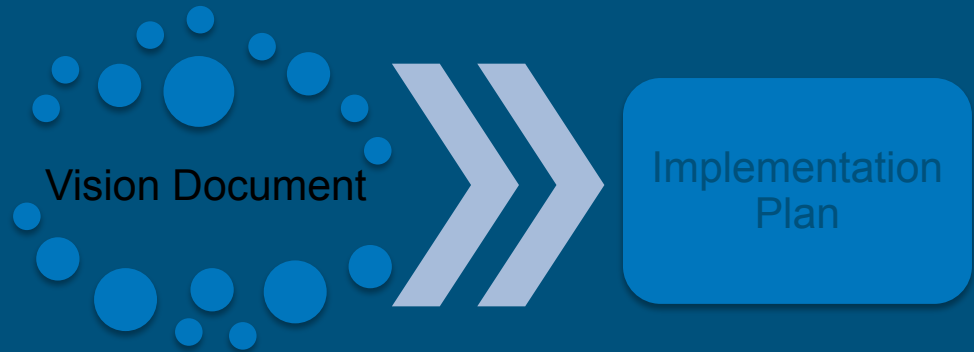
Describe how we would leverage existing resources

Describe specific strategies for involving social scientists in SZ4D

Learn from the ShakeAlert model (Joint Committee for Communication, Education, and Outreach)

What is the workplan?

What are the specific responsibilities of personnel involved?



Implementation Plan



Establishing and Sustaining Partnerships with Key Communities

Coordinate Existing & New International Capacity Building Efforts

“Matchmaking” between PIs and BECG Efforts

Shepherding Communities of Practice for Social Change

Improve Training by Strengthening Relationships with Key Partners

Establishing and Sustaining Partnerships with Key Communities

Travel to MSIs to discuss potential for mutual benefits with staff and build trust;
Engage minority serving organizations (e.g., NABG, NAGT2YC);
Follow up with workshop to develop shared agenda within SZ4D

Develop the Partner Relay model (coordination with local community leaders) throughout our focus subduction zones to accomplish more effective outreach

Funding support to investigate equity issues in community engagement and develop solutions through partnerships with local hazard agencies

Shepherding Communities of Practice for Advancing Our Understanding

Facilitate year-long groups of physical and social scientists focused on a specific issue to develop Collective Impact framework

Use stipend support to recruit, ensure commitment, and demonstrate importance

Outcomes presented to SZ4D governance for decisions about implementing recommendations

Coordinate Existing and New International Capacity Building Efforts

Workshops to bring existing groups together to compare current efforts and identify gaps where there are opportunities for new developments

Regular meetings between SZ4D governance and PIs working internationally to prioritize needs and coordinate training

Support travel and staff coordination to enable bi-directional international student/postdoc exchange programs

Support for translation of educational materials to broaden impact internationally

Improve Education & Training by Strengthening Relationships between SZ4D and Key Partners

Incorporate SZ4D results into formal and informal education through partnerships between scientists, educators, and organizations

Develop and implement CIDER-like interdisciplinary trainings on SZ4D topics

Support geoscience education research investigating strategies to improve how we equip students and postdoctoral with SZ4D skills



"Matchmaking" Between PIs and BECG Efforts

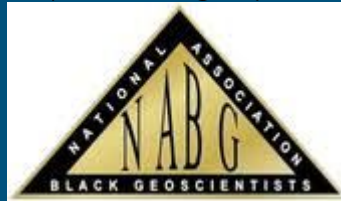
Use workshops to connect and equip PIs for successful interdisciplinary research with scaffolding for being an effective collaborator

Build a system where PIs are able to contact SZ4D in proposal planning stage to develop a broader impacts strategy that aligns with existing BECG efforts

SZ4D helps to identify potential connections to existing efforts and share points of contact

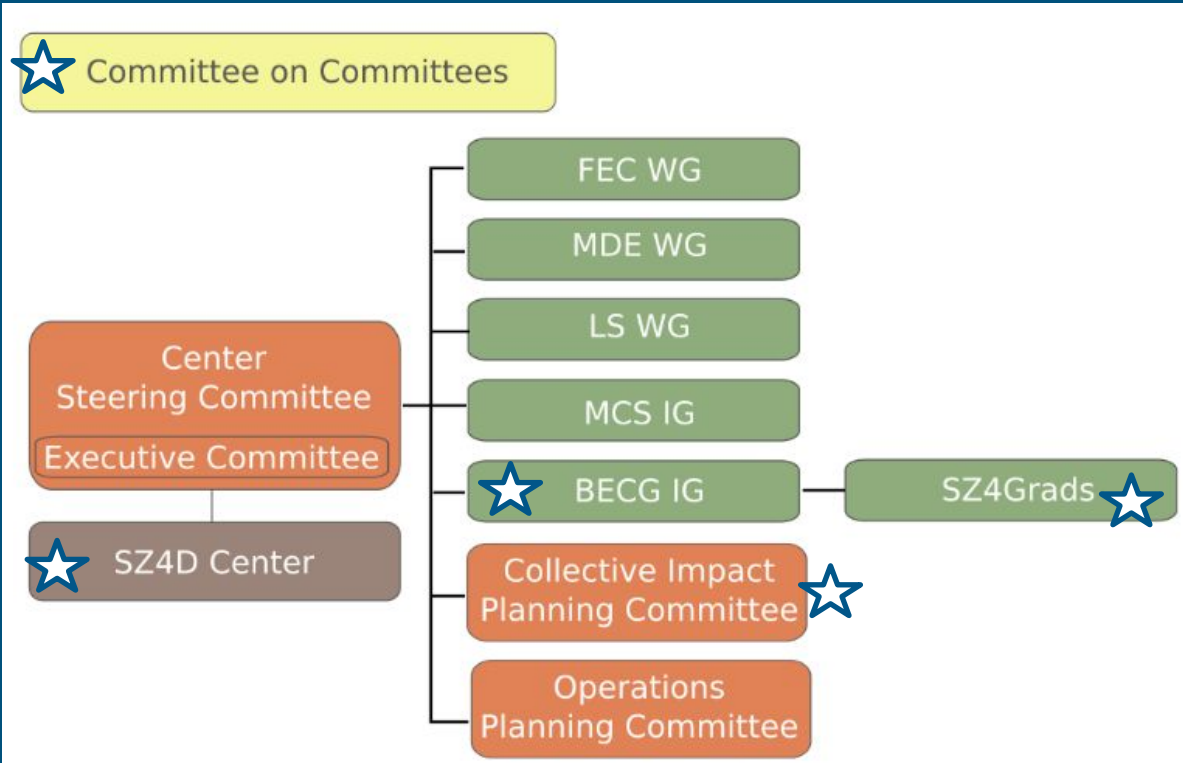
Establish a list of local focus-site scientists and organizations to connect with prospective PIs and establish shared goals

Partnerships to Leverage and Learn From



Volcano Disaster Assistance Program

BECG in SZ4D Governance: It's Happening!



BECG Integrative Group Members

THE NEXT GENERATION

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