
A community-based approach to designing a resilient community food system

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Agenda

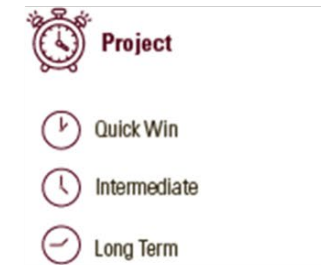
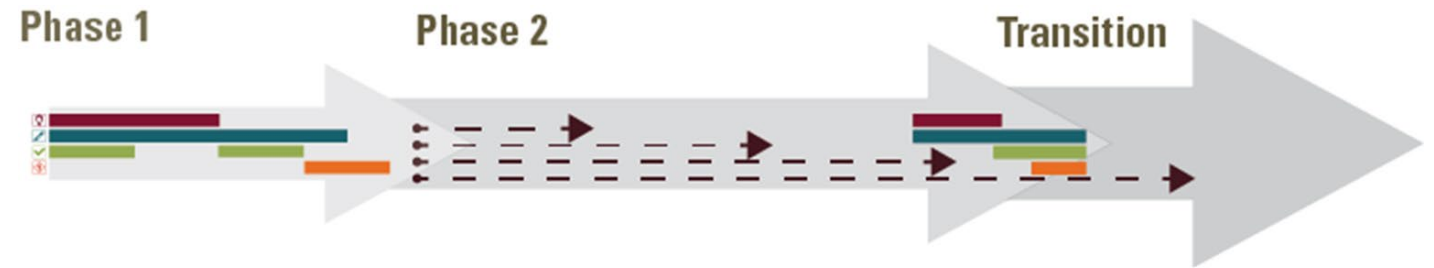
- Resilient Food Systems Framework Overview
- Methodology
- Case Study Examples
- Tools and Resources

Resilient Food Systems

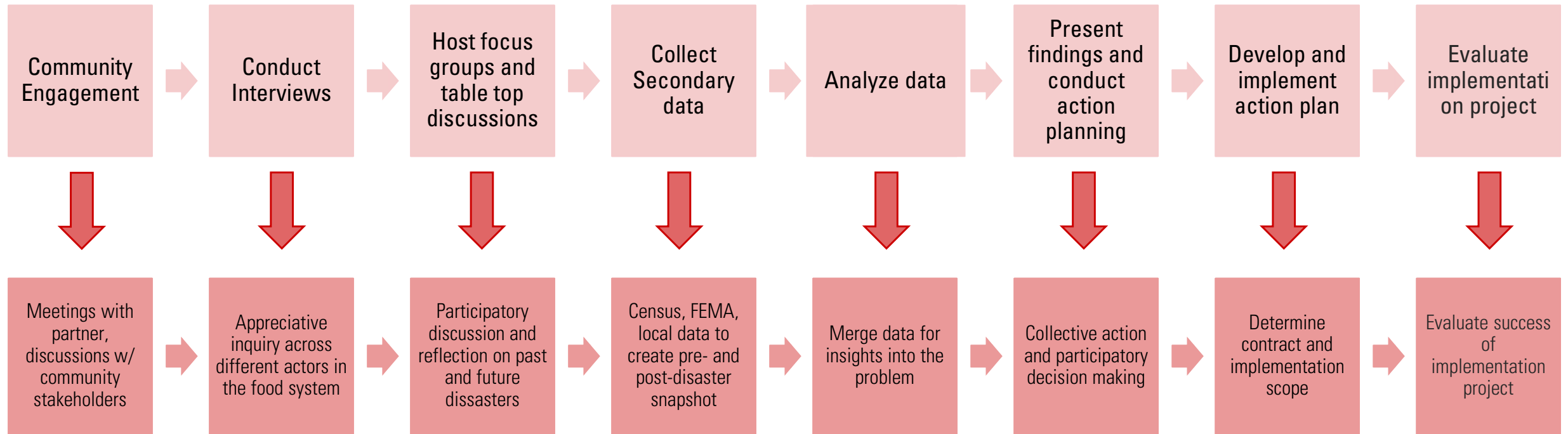
“The capacity for a place- and values-based food system, and the actors within, to be able to withstand shocks and disruptive pressures while maintaining basic structures, processes and functions of and within the community food system and supply chain, ensuring the ability to produce and access nutritious and culturally acceptable food over time and space, and creating a new normality.”



Food System Framework



Methods: Data Collection & Analysis



Interviews

- Business and Organization
- Community and Food Systems
- Disaster impact, response, and recovery
- Future goals and aspirations
- Snowball

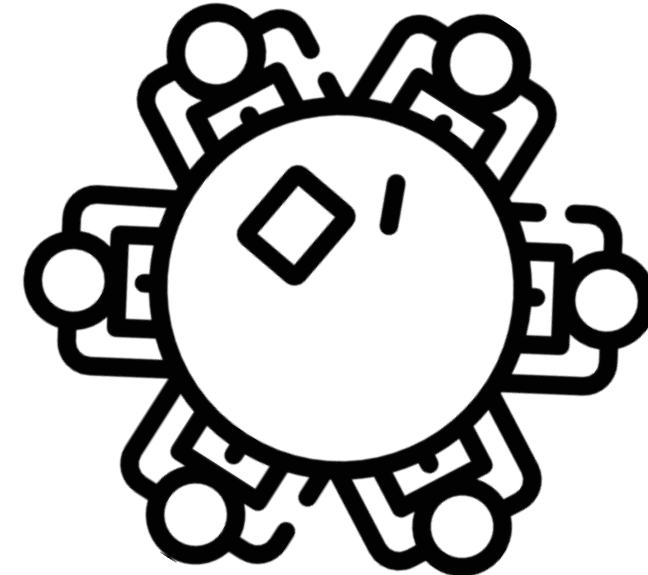
Foresight Focus Group and TableTop

Foresight Focus Group

- Guided discussion to help participants anticipate future shocks, draw on past lessons, and identify strategies to strengthen community resilience
- Guiding questions on flooding impacts on business and community, perceived recovery, what went well, what did not, and what should happen in the future

Table-Top Scenario

- Group tabletop exercise using flooding scenario
- Guided questions on preparedness, response, and recovery
- Groups by role or scale (farm, service orgs)
- Timeline prompts:
 - 2 weeks out
 - 2 days out
 - Event hits
 - Post-crisis
 - Extended recovery



Assessment and Snapshot

Loss of communications and increase in mental stress occurred for all individuals that participated in the survey, and 85% stated they had damage to home or property.

In addition to the immediate impact of the storms, there were continuous rains and floods that continued to impact the territory as well as power outages, severe infrastructure damages, and general collapse of communication and connectivity. The territory had over 22,500 damaged homes, accounting for over 52% of the housing. By December 2017, less than 50% of all islands reported power to homes. Storm damage to infrastructure included roads, maritime facilities, and airports.

Losses of over \$1.5 billion economically occurred in the US Virgin Islands territory through loss of wages, lost government revenues, and commercial property damage.²

Usefulness of organizations when responding to a Natural Disaster

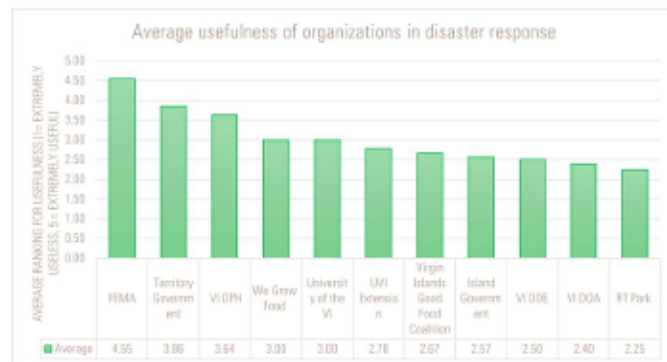


Figure 2: Average usefulness of organizations for responding to Natural Disasters; see Snapshot, Table 9 for total participant numbers.

Individuals were asked about usefulness for organizations in the U.S. Virgin Islands, based on a pre-made list from interviews. FEMA, Territory Government, and Virgin Islands Department of Public Health were seen to be the most useful organizations, while Research and Technology Park, Virgin Islands Department of Education, and Virgin Islands Department of Agriculture were seen to be the least useful. Some of this response may be due to the perspective that Department of Agriculture and in general Government agencies do not have capacity. The perception is that there is a realization that the works needs to be done, but there are not people who are able to do it.

² FEMA. (2018). *St John Community Recovery Plan* September 2018.

SUGGESTED PRIORITIES FROM ACTION PLANNING

The priority that will be acted on through funding from the Agricultural Marketing Resource Center is the creation of a farm cooperative, specifically identified in priority 1 below. The primary goal will be to first understand the harm and concerns still present from what occurred with the cooperative that was developed years ago. Following this understanding, facilitated sessions will occur to identify ways to work together on a new business collaboration for seeking out expense sharing, aggregation of products, grant applications, etc. The \$10,000 will be allocated to the Virgin Islands Good Food Coalition, which will then provide stipends to farmers and support organizations for attending meetings and developing a plan.

No. 01

Create a farm cooperative for addressing current needs in individual business models.

No. 02

Establish better social networks and mechanisms for engagement in policy development and government.

No. 03

Identify existing and food supply pre-storm that farmers, grocers, etc. have on hand and develop a strategy for storm mitigation, including policies for pre and post storm.

No. 04

Establish peer to peer networks, mentorship, and technical support options for existing and new farmers, particularly around risks within the agriculture and food business sectors.

No. 05

Launch an online farmers market.

No. 06

Improve and invest in resilient infrastructure for farming, processing, storage, and distribution.

No. 07

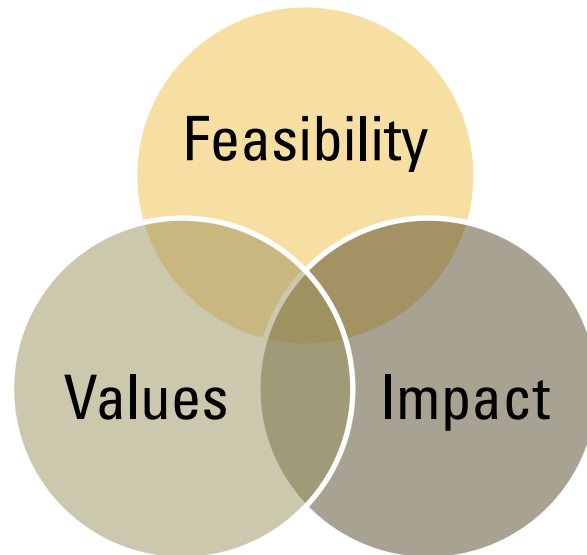
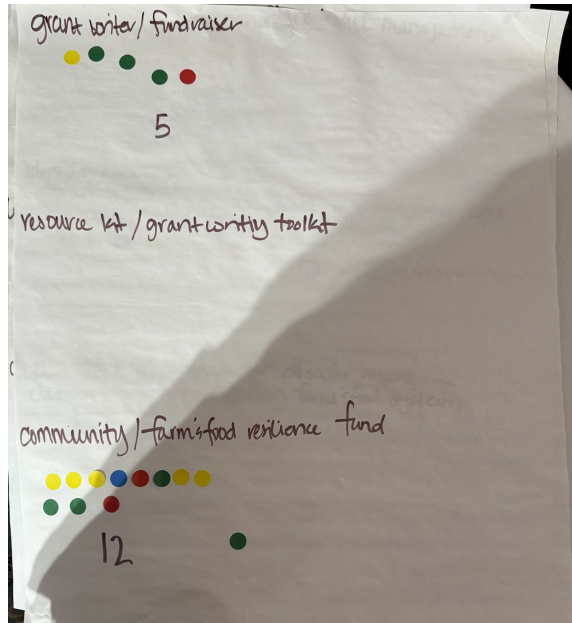
Create a community disaster plan and communication strategy.

No. 08

Create new, and update existing farm and food business educational resources.



Action Planning



Prepare	Identify existing food supply and products; develop strategy for storm mitigation on crops and animals; ensure policies are in place to access land post-storm
Plan	Create disaster contact list – locally, regionally, and outside disaster zone for response support
Educate	Establish peer-to-peer networks and mentorship with existing and new farmers
Update	Create new and updated materials for financial, marketing, and production risk associated with climate change, business best practices, and opportunities for market expansion
Build	Create a new business cooperative for farmers to allow for cost-sharing on equipment and supplies, and potential collective aggregation of products for sale
Launch	Develop and launch an online farmers market, with e-commerce for individual farm and food businesses- with proper marketing materials on use
Repair	Repair and develop new water access protocols, including funding for additional water trucks and storage facilities for farmers
Invest	Invest in resilient infrastructure for storage and processing for products; consider modular and mobile facilities
Engage	Enhance connections for farmers, consumers, and advocates to be part of policy making process

Project Implementation

Texas Resilient Food Systems: Scenario Planning June 6, 2023

Scenario #1: Winter Storm

Farmer's Market

*Needs longer-term planning

Vendors	Structure	Staff
Communication, connection to one another	Leverage indoor space (*Coordinate who has extra storage at their farm that could help)	Need volunteers (*Farmer's markets need community volunteers to assist market vendors)
\$ resources/support	Generator for cold storage (*ACC Ag Sciences has cold storage)	*Texas Farmer's Market mailing list to notify about disaster

DECISION POINT 1: sub-zero temps warning, emergency starts in two weeks

- Changing venues, hours, cancelling, contingency plans (to farmers, staff, customers/public)
- Disaster preparedness info share (ex. Bastrop Co. office of emergency prep), do you need to cover, harvest, etc. (winterize/weatherize)
- Have fuel for generator, make sure it works
- Salt for sidewalks
- Prepare farmer's market infrastructure (wrap pipes, etc.)
- *Decide: do we have staffing, resources to act as a warming center?
- ID closest person to venue to check facility during freeze
- Utilize space for a food distribution location

DECISION POINT 2: pipes will be frozen, emergency starts in two days

- Assumption: road will be icy

Producer Disaster Preparedness Checklist

General Practices

- ☐ Identify partners outside of region affected by hurricane to support with materials and communication.
 - Build relationships and trust with community members.
 - Establish pre-disaster and post-disaster contacts.
 - Consider networking both internal and external to disaster zone and address needs and innovative ways to respond.
 - Partnering with organizations and support systems out of the disaster zone, may help with receiving support from non-impacted areas.
- ☐ Develop a community-wide disaster plan that includes preparation and recovery for agriculture and supply chain.
 - Include:
 - Debris and material management, such as utilizing fallen trees for mulch or building of new fence rows; consider mulching on property to keep material on-farm vs. hauling away downed trees to different location.
 - Allow for farmers to get access to their land immediately; this will support farmers being able to access their livestock or crops and assess damage and immediate needs- especially for those who live off site.
 - Identify ways of re-securing and identifying existing food supply available.
 - Identify existing food supply pre-storm that farmers/ grocers/ etc. have on hand.
 - Identify options for aggregation and safe distribution of food post-disaster so food does not go to waste without electricity; create bunkers and food safe storage options to secure food.
 - Understand and assess commodities across the territory and create a plan for resupply after a storm.
- ☐ Develop a hurricane kit for farms and small food businesses.
 - Consider including generator, gas, farm stand pop-up, water-tank, solar powered charger, cellphone booster, etc.

Partners: Texas Center for Local Food, Farmers, Emergency Management, Businesses

IOWA STATE UNIVERSITY
Extension and Outreach

Partners: VI Good Food Coalition, Farmers, Department of Agriculture, FEMA

Case Study Communities



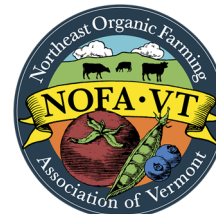
★ 2020-2022 communities

★ 2023-2025 communities

COMMUNITY	PLACE-BASED COMMUNITY	PARTNER ORGANIZATION	DISASTER IN ADDITION TO COVID	RESEARCH PARTICIPATION
ALASKA	Rural: Kenai Peninsula	University of Alaska Extension and Outreach, Alaska Food Policy Council and Homer Soil and Water	Swan Lake Fire- 2019	7 interviews 2 focus groups (6 participants) 35 survey responses, completion rate 1.5%
ARKANSAS	Suburban: Washington and Benton County	University of Arkansas Extension and Outreach	Strong winds and tornado- 2017;	13 interviews 1 focus group – 6 participants 109 survey responses, completion rate 16%
IOWA	Rural: Marshall County	Iowa State University Extension, Marshall County Extension	Derecho- 2020 and Tornado -2018	19 interviews 2 focus groups – 6 participants 35 survey responses, completion rate 5%
TEXAS	Rural: Bastrop County	Texas Center for Local Food	Lost Pines Fire – 2011; additional climate events (flood, drought, winter storm, etc.)	17 interviews 5 focus groups- 12 participants 76 survey responses, completion rate 18%
US VIRGIN ISLANDS	Regional: Territory	Virgin Islands Good Food Coalition	Hurricane Irma and Maria – 2017	12 interviews 3 focus groups – 17 participants 18 survey respondents, completion rate 3.8%
WASHINGTON	Kittitas County	Kittitas County Chamber	Fire and Smoke – 2023 on	9 interviews; 3 focus groups – 18 participants
SOUTH CAROLINA	Greenville County	LiveWell Greenville	Tropical Storm Helene - 2024	9 interviews; 3 focus groups – 56 participants
VERMONT	Northeast Kingdom	NOFA-Vermont	Flooding – 2024 and 2025	9 interviews; 3 focus groups – 40 participants

Case Study: Northeast Kingdom, Vermont

- 26 farms across the NEK
- 3 on farm gatherings
 - Farm financial resilience
 - Social resilience
 - Ecological resilience
- Practical tools & regional network
- Identify regional needs and how to use this collective momentum to meet them



Join the NEK Farmer Resilience Cohort

Join fellow NEK farmers for 3 on-farm evening gatherings to collaboratively explore ways to strengthen farm and community resilience in northeast VT.

Together, expand your toolkits for building resilience, share and learn with your neighbors, and strengthen a network of peer support.

COHORT SESSIONS

FARM FINANCIAL RESILIENCE Sweet Rowen Farmstead	AUGUST 6 Glover, VT
COMMUNITY RESILIENCE Breadseed Farm	SEPTEMBER 3 Craftsbury, VT
CLIMATE RESILIENCE PLANNING Joe's Brook Farm	SEPTEMBER 17 St. Johnsbury, VT

Cohort members will receive financial compensation

One meeting	\$200
Two meetings	\$450
All three meetings	\$725

To join or learn more:
email kevin@nofavt.org

Case Study: Greenville County, South Carolina



- Creation of an initial Emergency Food Response Directory connecting local food access organizations with emergency management and disaster response partners.
- Development of an early-stage draft of the Greenville County Emergency Food Response Plan with clear next steps for refinement and implementation.
- Strengthened cross-sector relationships and improved understanding of how emergency management systems function and how community food partners can effectively integrate within them.
- Successful participation in a mini real-life simulation during Tropical Storm Imelda, demonstrating improved organization, communication, and shared leadership.

Interviews

- To start us off, would you mind telling me about your [business/ organization/ agency]?
- Can you describe the [community] you work in? What's it like.
- For the following questions, I'd like you to consider your [business/ agency/ organization] interactions.
- Tell me about the food system in [community]. Can you describe the food system in which you operate?
- When thinking about your [community] food system, have you seen efforts to increase community-based development for community food systems?
- Next, I'd like to discuss how [natural disaster] has affected your community food system, and your [business/ organization/ agency].
- How did you respond to impacts of [natural disaster].
- In what ways did you [business/ organization/ agency] receive support from your community like following the [natural disaster]?
- Where do you think you are on the road to recovery or rebuilding from [natural disaster]?
 - With 100% being back to normal, what percent do you feel you have grown back since [natural disaster]
 - What challenges have you faced as you have begun to rebuild?
 - How would you describe operations now relative to what things were like before [natural disaster]? How do things compare to 'normal operations'?
 - What does the customer situation look like? Are customers lining up again? Has the customer base changed and if so, how?
- Thank you for sharing your experience. As you think about your [community] food system, what are you most excited about moving forward and why?
- **Snowball:**
 - Who do you believe is the most influential/active/ etc. person regarding food, health, or community development in [community] is?

Foresight Focus Group

- Please share about the experience your business or organization has had during [natural disaster] relating to food systems. How has [disaster] impacted you and your work?
- What have you seen as impacts community-wide for impacts from [disaster]? Anything different from our previous discussion?
- In what ways do you feel you have recovered?
 - In what ways do you still need to recover?
- Thank you for sharing all that you and your community at large has gone through related to [natural disaster]. It has been roughly [years] since [natural disaster] started impacting [community].
- Let's discuss about what went right in the response to [natural disaster]. Share with me what you think your business and community did well.
- Great. Now, think about what didn't go as well. What didn't work?
- So, knowing what you know now about [natural disaster] and how your community responded, what needs to happen for responsive in the future?
- Based on this discussion, if we were to create a team to support in action in the future, who needs to be involved in this response? What organizations, businesses, etc. need to be actively engaged? Are you aware of teams that already exist (COAD/VOAD/ long term recovery groups?)
- Is there anything else that you would like to share that you feel is relevant that we haven't talked about already related to [natural disaster]?

Tabletop Exercise

It is mid-August and due to a La Niña weather pattern, the area received well over its normal share of rain during the last 60 days. Creeks and rivers are at capacity and the ground is saturated. An additional 5 to 15 inches of rain are forecast to fall throughout the state over the next 5 days.

- Modeled from North Carolina Drinking Water Incident Response Toolkit: Sample Tabletop Exercise: Flooding Incident. www.drinkingwater.sog.unc.edu

Inject #1 – 48 hours pre-flood event

At 7:30 a.m. on Tuesday morning you receive notification that your community has been placed under a flood watch for the next 48 hours, with the expectation of receiving an additional 12 inches of rain.

Discussion:

- What are you doing on your own site to prepare?
- Who do you need to connect with to ensure support?
- What organizations need to be activated?
- Is there a plan for harvesting product, moving livestock, etc. before river floods. Where will products go and be distributed?

Inject #2 – flood event

As of 8:00am Thursday morning, your area has received 10 inches of rain. Many rivers have breached and flooding is occurring on farms and throughout community areas. Power is out throughout most of the region and has been out for roughly 8 hours. Generators at water treatment plants are running out of fuel and have stopped functioning in many cases. Local officials have shared there are numerous private drinking water wells that have flooded and the local utility's drinking water distribution system has been impacted due to the prolonged power outage and numerous broken mains.

Discussion:

- What are you doing on your own site to respond- check on family, livestock, etc.?
- Are you evacuating? What areas of concern do you have for safety?

Inject #3 – post flood event

An additional 5 inches of rain occurred from Wednesday evening through Friday at 12 p.m. The rain has now subsided and standing water is starting to recede. Residents, Farmers, and businesses are able to get back to their sites to check in on property. Additionally, there is public concern around water safety and transportation as water recedes

Discussion:

- What are the first things you are checking on at your business as your get back on site?
- Do you have plans and procedures for drinking water post-incident recovery? What are they?
- Which agencies and organizations are you coordinating with to recover as quickly as possible?

Group Discussion

- General discussion:
- What was a surprise from the conversation?

Findings: Community Capitals and Food Systems

- Understanding and assessing pre-conditions across community capitals, according to their level of resilience, adaptive capacity, and need for transformation could assist communities with their understanding of existing challenges and opportunities to become more resilient
- While all community capitals intersect with food systems and resilience, the most frequently discussed were social, built, and natural capitals.
 - Social related to adaptive capacity and the ability for groups or networks to respond and act immediately; trusting relationships; and cultural capital and having respect for all community members and understanding of cultural practices prior to entering and working with a community.
 - Built capital was more frequently discussed regarding creating sound infrastructure choices, having transportation routes and logistics planning, and proper equipment, storage and building infrastructure for farm and food businesses.
 - Built and natural capital frequently overlapped because of the complexity of planning systems and keeping natural amenities in place and native ecological systems. This could include preserving waterways and land and could also include supporting opportunities for diverse production practices.
- While individuals share their perceived importance for local food and farm businesses, shopping choices and participation show that local is not as important as other characteristics and displays competing values.
 - Also, while local production may be important, the relationship with the grower or producer, was the second least important category for a food buying attribute, with organic being the least important.

Findings: Land Grant Universities and Organizations

- Lack of awareness of organizations and how to get engaged in emergency management efforts
- Local organizations are a key element in resilient community food systems and promote avenues for participation in response from community citizens (Sharp, Jackson-Smith, & Smith, 2011)
- Land Grant University Extension and Outreach capacity and relevance:
 - Building trust and collaboration, providing support for strategic planning, and conducting research and outreach with best practices for mitigating impact and developing resilient community food systems.
 - Offer support for strategic planning and facilitation capacity is a potential for LGUE to provide (Sitaker, Kolodinsky, Jilcott Pitts, & Seguin, 2014)
 - Leverage resources and expertise to transdisciplinary approaches (Copeland, 2022; Kopp, 2021)

Resilient Food Systems Partners and Roles

Phase 1 Activities	Partner Organization Role	ISUEO Role
Trip 1: 3-4 days		
Interviews (virtual or in-person): 10-15 total <ul style="list-style-type: none"> • 30 minutes 	Provide connection and list of partners	Schedule and conduct interviews
Foresight Focus Group and Table-top Exercise (2.5 hours) - up to 3 total <ul style="list-style-type: none"> • 10-minute introductions • 50-minute tabletop exercise • Break • 40-minute focus group • 20-minutes debrief 	<ul style="list-style-type: none"> • Collaborate with ISUEO to schedule session(s) • Publicize • Participate in session <ul style="list-style-type: none"> • **if multiple sessions occur, only requested to attend one session** 	<ul style="list-style-type: none"> • Coordinate schedule with Partner organization • Create activity and facilitate
Trip 2: 1-2 days		
Action Planning Session (1.5 - 2 hours) <ul style="list-style-type: none"> • 20-minute presentation on findings • 60-minute action planning and prioritization • 30-minute discussion and confirmation of priority project for implementation 	<ul style="list-style-type: none"> • Collaborate with ISUEO to schedule session • Participate in Session 	<ul style="list-style-type: none"> • Coordinate schedule with Partner organization • Create presentation • Facilitate activity

Resilient Food Systems Certificate

Certificate Process

- 3-day applied training on building resilient community food systems
- Integrates multiple disciplines and theories into one cohesive framework
- Emphasizes facilitation, collaboration, and experiential learning
- Includes foresight focus groups and table-top resilience scenarios
- Supports participants to co-develop actionable projects for their communities
- Provides tools and techniques transferable to various settings
- Culminates in a Certificate of Completion recognizing learning and participation

Toolkit

Consulting

Publications

- Resilience and Emergency Management Tools
- Scenarios
- Tabletop Exercises
- Foresight Focus Group
- Resilient Food System Assessment
- Interviews and focus groups
- Secondary data
- Analysis
- Final report
- Resilient Food Systems Process
- Phase 1
- Phase 2
- Design Thinking
- Feasibility

Modules

- Mapping and Visualization
- Story maps
- Mapping 101

Thank you!

Questions and Discussion

Contacts:

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<https://www.agmrc.org/foodsystems/resilient-food-systems>

<https://www.extension.iastate.edu/ffed/food-systems>