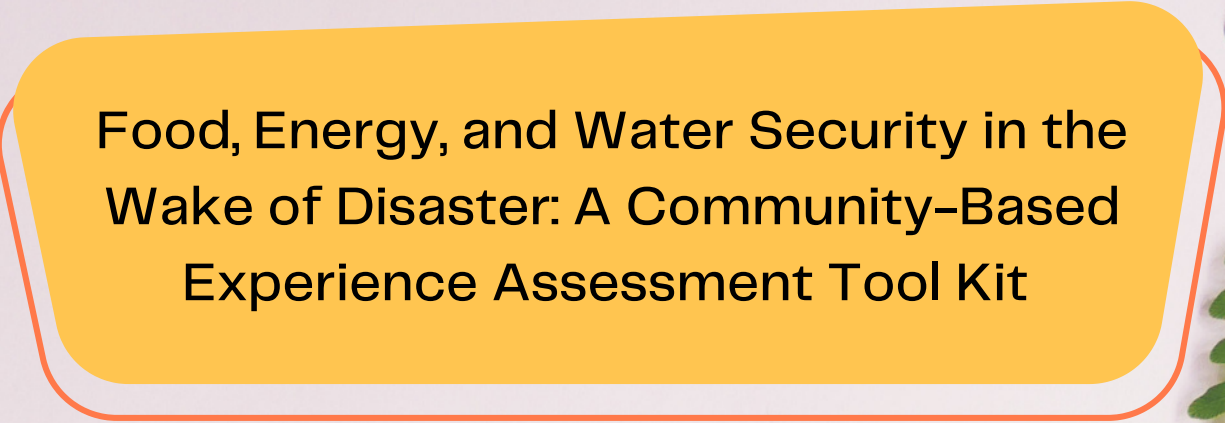




Food, Energy, and Water Security in the
Wake of Disaster: A Community-Based
Experience Assessment Tool Kit



A Tool Kit for Assessing Community Well-being



*Co-Created by Community Leaders
and Academic Researchers*

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I. Background: About This Toolkit

A. What is a toolkit?

A tool kit is an action-oriented source of information and resources, or tools, that guide users to develop a plan or organize steps for an activity, such as a survey. A critical part of a tool kit is the opportunity to replicate data collection that can be later used for making a plan for action.

B. Who is this toolkit for?

This question has two answers. First, this tool kit can be used by communities that want to collect information around issues of food, energy and water before, during, or after a disaster. Second, health practitioners and professionals interested in how resource scarcity impacts community health and resilience will also be eager to use this tool to support the creation of public health and public policy programs to reduce adverse health impacts on their communities.

C. By whom is this toolkit informed?

This tool kit is informed by over 25 previous assessments of food, energy, and water (FEW) security, as well as community resilience in disaster contexts. Likewise, 16 community leaders from Corcovada, Añasco, Puerto Rico, USA helped to inform the structure, language, and topics of this toolkit. This is the first toolkit (to our knowledge) that brings FEW security into conversation in a disaster context. It is also the first time (to our knowledge) that a toolkit like this was co-created with local residents, particularly community leaders, who have first hand experience with multiple disasters that have recently affected the food, energy, and water systems of their community, with direct implications for health and overall well-being.

D. Why use a community-based FEW securities assessments?

There are three major reasons. First, this toolkit was co-created by people who have firsthand experience with FEW insecurity and who collaborate actively to make their community self-sufficient in these vulnerable times. Their experiences are key for other communities experiencing similar events. Second, we conducted a review of important assessments and brought them together in conversation with academic literature and community experiences. Third, this assessment intends to help communities or practitioners assess needs and opportunities for positive change.

E. What can one expect from using this toolkit?

You can expect two key things from using this toolkit: (1) an exploration of challenges in the community you are implementing the tool kit, and (2) an avenue to present challenges to policy makers, nonprofits, or other institution that can support local agendas.

II. Process: How We Did It

A two day workshop event with community residents in Corcovada was the basis for this toolkit co-creation. Our first day of workshop fostered conversations and education to understand what is different about FEW needs for communities facing multiple compounding hazards and cascading effects, as compared to single hazard events. Along with these workshops, the research team considered peer-reviewed literature and existing assessments in these topics.

Following this exercise, the research team met to create a survey to be deployed in three different times: before, during, and/or after a disaster event or natural hazard.

The before survey is intended to be used for preparedness and mitigation strategies. The during survey is intended to be utilized in the days after the disaster and up to 3 months following a disaster. The after survey is expected to be used 6 months and up to a year following the disaster.

A. Study Design

To validate the instrument, the research team consulted four community experts and academic experts in the areas of food, energy and water security. Then, the research team incorporated their feedback on content, language, structure, and meeting survey goals. The research team conducted a second round of validation for the "before" survey with a small sample (n=13) of residents in the Corcovada community. We used a purposeful sample approach to have a diverse set of residents respond to the survey and provide feedback to incorporate to the existing survey. **Figure 1** provides the overview of our approach.

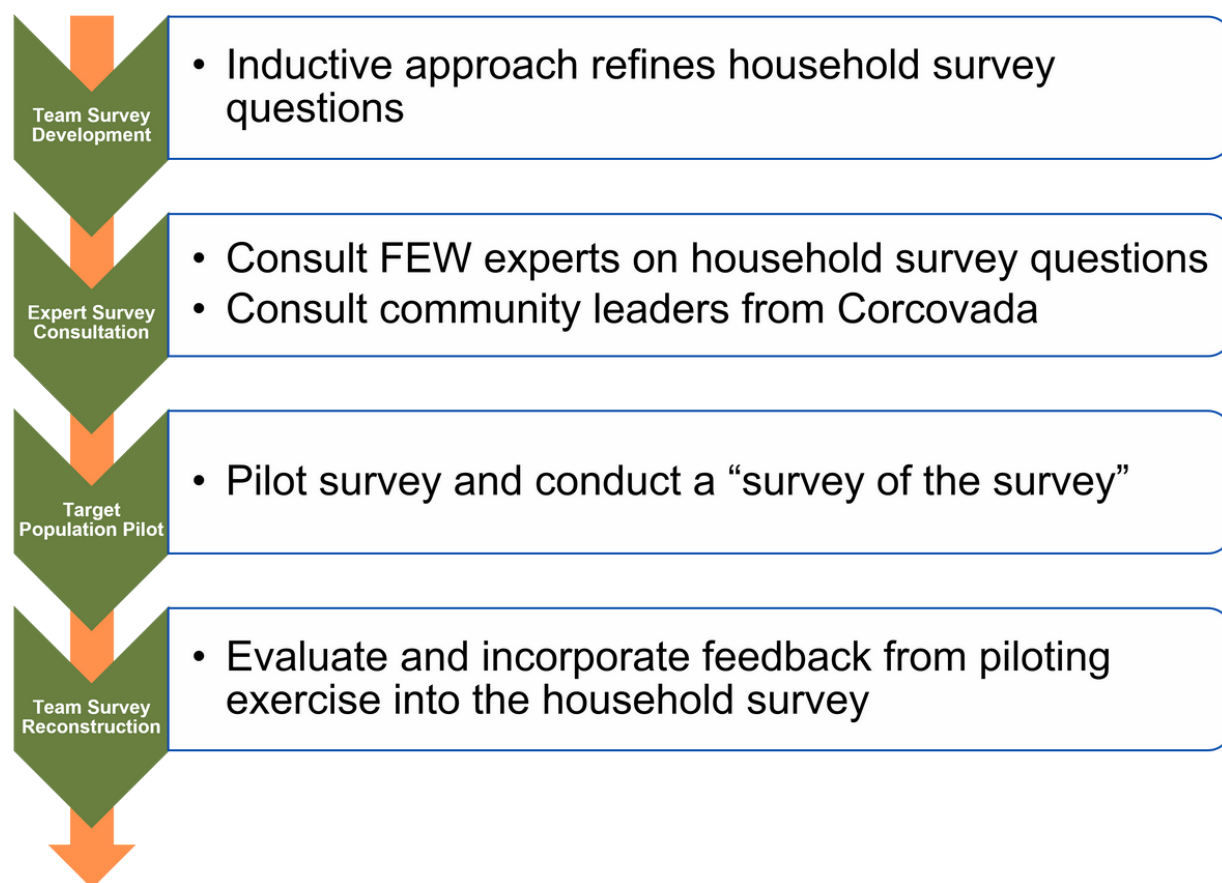


Figure 1 Outline of the steps taken to prepare, pilot, and revise the survey.

B. When to use this tool kit

This toolkit can help communities when facing challenges, collecting information to get funding, trying to get media attention, trying to influence policy makers, and/or self-organizing agenda setting. Also, the toolkit can help create materials for the community to use in preparation or response to an event.

III. Considerations for Survey Deployment

A. On the Importance of Reflexivity and Informed Consent

What is reflexivity?

A interviewer must acknowledge their involvement in the topic of the research at hand; i.e. involvement in the community that is being studied.

Why is reflexivity important?

A interviewer who is involved in the community being studied will inevitably have thoughts and feelings towards the research at hand that are heavily influenced by their membership in the community. This could impact the way that interviews are conducted or how data is interpreted, so it is important to recognize these feelings and intentionally minimize the influence that they have on the research.

What is Informed Consent?

Interviewees should be made aware of the goal of the study, the potential outcomes, how their answers will be used, who will have access to their answers, and an assurance of anonymity. This security often leads an interviewee to feel more comfortable in being honest during their interview. Some interview questions are sensitive and interviewees may not be comfortable answering; it is important that this be approached in an understanding manner, avoiding making an interviewee feel pressured to give a response.

B. Data Collection Procedures

When conducting a survey, it's important to establish clear data collection procedures to ensure accuracy and reliability. Here's an outline of the key steps involved in data collection for a survey:

Preparatory Phase:

1. Review the survey questions.
2. Determine the appropriate data collection method (e.g., online, paper-based, phone, in-person).
3. Define the target population and select how many households you will interview.
4. Define the characteristics and demographics of your target audience to ensure you reach the right participants.

Participant Recruitment:

1. Determine the most suitable recruitment method based on your target population.
2. Create a clear and appealing invitation or recruitment message.
3. Choose the appropriate distribution channels (e.g., email, social media, website).
4. Monitor participant response rates and adjust recruitment efforts if needed.

Data Collection:

1. Ensure proper instructions are provided to participants before they begin the survey.
2. Monitor the data collection process to ensure it is proceeding smoothly.
3. Address any technical issues or participant concerns promptly.
4. Assure participants that their responses will be kept confidential and protected.
5. Consider how you will secure your data and share this information with potential participants so they can be aware of how their information is being managed.

6. Choose the right survey distribution channels: Utilize various channels to distribute your survey, such as social media, group chats, or in-person house visits. Consider the preferences and accessibility of your target audience to maximize response rates.

7. Set a realistic timeline: Allocate enough time for survey deployment, data collection, and analysis. Plan your timeline carefully to avoid rushing the process and to ensure you can analyze the results effectively.

C. Data Management:

Be sure to develop a system for organizing and storing the collected survey data securely. One way to do this is to ensure anonymity and data privacy and assure participants that their responses will be kept confidential and their personal information will be protected. You can consider how you will secure your data and share this information with potential participants so they can be aware on how their information is being managed (see **Section V** for more information on data management and analysis).

By considering these factors, you can increase the chances of a successful survey deployment and obtain valuable insights from your community.

IV. Surveys

It is important that survey participants are aware that their responses are confidential and will not be shared outwardly. Additionally, participants should be encouraged to be as honest as they can, and assured that there is no such thing as a wrong answer when considering their responses to the following questions.

A. Before Survey:

As a reminder, this survey is intended to be deployed prior to a hazard.

Instructions:

I will read each question to you and ask that you answer according to what mirrors your reality. If you wish to make a comment about any of the questions, you may do it and I will make a note of it. The survey will take 25-30 minutes.

Section 1: Socio-Demographic Questions

1. What is your gender?
 - a. female
 - b. male
 - c. nonbinary or gender non-conforming
 - d. trans or transgendered
 - e. other

2. What is your household composition (including yourself)?
 - a. Number of:
☐ Female
☐ Male
☐ Other gender

 - b. Number of:
☐ Infant (0 - 2)
☐ Toddler (3 - 6)
☐ Adolescent (7 - 12)
☐ Teenager (13 - 17)
☐ Adults (18 - 60)
☐ Elder (> 60)

3. Is anyone in your household pregnant?
- a. Yes
 - b. No
 - c. I'm not sure
4. What is your employment status?
- a. Employed
 - b. Unemployed
 - c. Self-employed
 - d. Retired
5. Do you or anyone in your household receive government support? (check all that apply)
- ☐ Food stamps
 - ☐ Government provided health insurance, such as medicaid (Vital)
 - ☐ WIC
 - ☐ Social Security
 - ☐ Other: _____
 - ☐ Prefer not to answer
6. Does your household have reliable transportation?
- a. Own a vehicle or other motorized vehicle
 - b. Own a bike or other non-motorized vehicle
 - c. Able to get transportation through another person
 - d. Able to get transportation through public transportation
 - e. No transportation of your own nor an ability to access it
7. Do you have pets?
- a. If yes, how many: _____
 - b. If yes, what kind: _____
8. Do you have access to technology from communication? (check all that apply)
- ☐ Phone (landline)
 - ☐ Phone (cellphone, no smartphone)
 - ☐ Phone (smartphone, such as an iPhone)
 - ☐ Computer (laptop or desktop)
 - ☐ Television/TV
 - ☐ Radio
 - ☐ Home Internet Access

Section 2: Home Health (Before Hazard) Questions

9. Thinking about all members of your household, do you have any health concerns in the home?

- a. Yes
- b. No

9a. If yes, what are the greatest health concerns in the home?

9b. In case of an emergency like a hurricane, how might these concerns be impacted?

10. Do you feel exhaustion or extreme tiredness?

- a. Yes
- b. No
- c. On occasion

11. Do you feel a desire to isolate and not have contact with others?

- a. Yes
- b. No
- c. On occasion

12. Do you feel impotent or hopeless?

- a. Yes
- b. No
- c. On occasion

13. Do you have trouble sleeping?

- a. Yes
- b. No
- c. On occasion

14. Is it difficult for you to concentrate?

- a. Yes
- b. No
- c. On occasion

15. Do you feel an uncontrollable profound sadness?

- a. Yes
- b. No
- c. On occasion

16. Does any member of the family have any disability?

- a. Yes
- b. No

16a. If yes, please elaborate:

16b. If yes, does this person need a caregiver?

- a. Yes
- b. No

17. Do any family members have issues with mobility, such as needing a wheelchair or other equipment, or being bedridden?

- a. Yes
- b. No

17a. If yes, please elaborate:

18. Is there a family member in need of special equipment? (e.g., oxygen tank)

- a. Yes
- b. No

18a. If yes, does this equipment require electricity?

19. Are there any members with medications that in times of crisis are difficult to obtain?

- a. Yes
- b. No

19a. If yes, which medications?

20. Are there any immediate health related needs in your household?

- a. Yes
- b. No

20a. If yes, please elaborate:

21. Do you have a back up plan to address the health concerns of members of your household if you are unable to get your household's usual medical care?

- a. Yes
- b. No

21a. If yes, please elaborate:

Section 3: Energy Security (Before Hazard) Questions

22. What is your main source of electricity?

- a. LUMA
- b. Solar Panels
- c. Other_____
- d. Our household does not have access to electricity

23. Does your household own an electricity generator?

- a. Yes
- b. No

23a. If yes, which type?

- a. Diesel
- b. Gasoline
- c. Natural Gas
- d. Solar

24. If not, do you have plans of buying an electricity generator?

- a. Yes
- b. No

25. Does your household have the capacity to share electricity with your neighbors if needed?

- a. Yes
- b. No
- c. N/A, participant does not have close neighbors.

25a. If yes, please elaborate:

26. Does your household have alternative equipment for lighting after an emergency?

Mark all that apply:

- ☐ Kerosene Lamp
- ☐ Solar Lamp
- ☐ Candles
- ☐ Flashlight
- ☐ Other:_____

27. Which kind of stove do you have access to?

- a. Electric
- b. Gas
- c. Other_____

28. In the last 3 months, have you had interruptions in access to electricity in your home?

- a. Yes
- b. No

28a. If yes, how has that affected your household needs?

Section 4: Water Security (Before Hazard) Questions

29. What is the main source of drinking water in your home?

- a. Puerto Rico Aqueduct and Sewer Authority (AAA)
- b. Community aqueduct
- c. Well water
- d. Ground water
- e. Fresh or spring water
- f. Bottled water or water vendor
- g. Other _____

30. What is the main source of water for cleaning in your home?

- a. Puerto Rico Aqueduct and Sewer Authority (AAA)
- b. Community aqueduct
- c. Well water
- d. Ground water
- e. Fresh or spring water
- f. Bottled water or water vendor
- g. Other _____

31. Is the water in your household safe to drink?

- a. Yes
- b. No

32. Are you satisfied with the quality of water in your household?

- a. Yes
- b. No

33. Do you own a water cistern?

- a. Yes
- b. No

34. In the last 3 months, have you had interruptions in access to water in your home for drinking?

- a. Yes
- b. No

34a. If yes, how has that affected your household?

35. In the last 3 months, have you had interruptions in access to water in your home for cleaning?

- a. Yes
- b. No

35a. If yes, how has that affected your household?

36. Does your household have the capacity to share water (giving or receiving water) with neighbors if needed?

- a. Yes
- b. No
- c. N/A, participant does not have close neighbors.

36a. If yes, please elaborate:

37. Do you have an alternate plan to access water for drinking in the event of an emergency?

- a. Yes
- b. No

37a. If yes, please elaborate:

38. Do you have an alternate plan to access water for cleaning in the event of an emergency?

- a. Yes
- b. No

38a. If yes, please elaborate:

Section 5: Food Security (Before Hazard) Questions

39. Has your household been able to eat balanced meals, such as having a variety of fruits, vegetables, meats, grains, and other essential foods?

- a. Yes
- b. No

40. Did you or others in your household ever cut the size of your meals or skip meals? (Modified from USDA 6-item)

- a. Often true
- b. Sometimes true
- c. Never true
- d. Don't know
- e. Refuse to answer

40a. If true, why did your household have to cut or skip meals?

- a. Not enough money
- b. No electricity
- c. No access to food
- d. Other _____
- e. Refuse to answer

41. From where does your household obtain most of its foods, such as a supermarket, food delivery, or a farmers market?

42. Do members of the household need specific foods due to health conditions, dietetic restriction, lifestyle or their religion?

- a. Yes
- b. No

42a. If yes, please elaborate:

Section 6: Before Hazard FEW Combination Questions

43. How will losing water access impact the food your family can make and eat?

- a. We won't be impacted
- b. We will be able to manage
- c. We can survive
- d. Our health will be at severe, even fatal, risk

44. How will losing electricity in your house and community impact the food your family can make and eat?

- a. We won't be impacted
- b. We will be able to manage
- c. We can survive
- d. Our health will be at severe, even fatal, risk

45. How will losing electricity in your house and community affect the amount of water you and your family have to drink each day?

- a. We won't be impacted
- b. We will be able to manage
- c. We can survive
- d. Our health will be at severe, even fatal, risk

46. How will losing electricity in your house and community impact the quality of water you and your family have to drink each day?

- a. We won't be impacted
- b. We will be able to manage
- c. We can survive
- d. Our health will be at severe, even fatal, risk

47. Do you have any other information you would like to share about your concerns before a disaster (hurricane, earthquake, landslide, flood, etc)?

- a. Yes
- b. No

47a. If yes, please elaborate.

B. During Survey

As a reminder, this survey is intended to be deployed several days following a hazard and up to 3 months after the hazard.

Instructions:

I will read each question to you and ask that you answer according to what mirrors your reality. If you wish to make a comment about any of the questions, you may do it and I will make a note of it. The survey will take 25-30 minutes.

Section 1: Socio-Demographic Questions

1. What is your gender?
 - a. female
 - b. male
 - c. Nonbinary or gender non-conforming
 - d. trans or transgendered
 - e. other

2. What is your household composition (including yourself)?
 - a. Number of:
☐ Female
☐ Male
☐ Other gender

 - b. Number of:
☐ Infant (0 - 2)
☐ Toddler (3 - 6)
☐ Adolescent (7 - 12)
☐ Teenager (13 - 17)
☐ Adults (18 - 60)
☐ Elder (> 60)

3. Is anyone in your household pregnant?
 - a. Yes
 - b. No
 - c. I'm not sure

4. What is your employment status?
 - a. Employed
 - b. Unemployed
 - c. Self-employed
 - d. Retired

5. Do you or anyone in your household receive government support? Check all that apply:

- ☐ Food stamps
- ☐ Government provided health insurance, such as medicaid (Vital)
- ☐ WIC
- ☐ Social Security
- ☐ Other: _____
- ☐ Prefer not to answer

6. Does your household have reliable transportation?

- a. Own a vehicle or other motorized vehicle
- b. Own a bike or other non-motorized vehicle
- c. Able to get transportation through another person
- d. Able to get transportation through public transportation
- e. No transportation of your own nor an ability to access it

7. Do you have pets?

- a. If yes, how many: _____
- b. If yes, what kind: _____

8. Do you have access to technology? Check all that apply:

- ☐ Phone (landline)
- ☐ Phone (cellphone, no smartphone)
- ☐ Phone (smartphone, such as an iPhone)
- ☐ Computer (laptop or desktop)
- ☐ Television/TV
- ☐ Radio
- ☐ Home Internet Access

Section 2: Home Health (During Hazard) Questions:

9. Is the [hurricane, earthquake, landslide, flood, etc.] affecting the health of people in your household?

- a. Yes
- b. No

9a. If yes, how is it affecting?

10. In the past 2 weeks, have you or someone in your household felt any of the following symptoms? Check all that apply:

- ☐ Little interest or pleasure in doing things
- ☐ You have felt down, depressed or hopeless
- ☐ Has not felt any of the above symptoms

11. In the past 2 weeks, have you or someone in your household felt any of the following symptoms? Check all that apply:

- ☐ Feeling nervous, restless, or on edge
- ☐ Not being able to stop worrying or not being able to control the worry
- ☐ Has not felt any of the above symptoms

12. Do you feel exhaustion or extreme tiredness?

- a. Yes
- b. No
- c. On occasion

13. Do you feel a desire to isolate and not have contact with others?

- a. Yes
- b. No
- c. On occasion

14. Do you feel impotent or hopeless?

- a. Yes
- b. No
- c. On occasion

15. Do you have trouble sleeping?

- a. Yes
- b. No
- c. On occasion

16. Is it difficult for you to concentrate?

- a. Yes
- b. No
- c. On occasion

17. Do you feel an uncontrollable profound sadness?

- a. Yes
- b. No
- c. On occasion

18. Does any member of the family have any disability?

- a. Yes
- b. No

18a. If yes, which?

18b. Do they require a caregiver?

- a. Yes
- b. No

19. Do any family members have issues with mobility, such as needing a wheelchair or other equipment, or being bedridden?

- a. Yes
- b. No

19a. If yes, please elaborate:

20. Is there a family member in need of special equipment? (e.g., oxygen tank)

- a. Yes
- b. No

20a. If yes, does this equipment require electricity?

21. Do you or anyone in your household have problems getting medication currently?

- a. Yes
- b. No

21a. If yes, which medications?

22. Are there any immediate health related needs in your household?

- a. Yes
- b. No

22a. If yes, please elaborate:

23. Is any member of your household suffering from a new medical condition, not experienced before the [hurricane, earthquake, landslide, flood, etc.]?

- a. Yes
- b. No
- c. Refuse to answer

23a. If yes, please elaborate:

24a. Are any household members currently sick?

- a. Yes
- b. No
- c. Refuse to answer

24a. If yes, how many household members?

24b. If yes, what condition(s)?

Section 3: Energy Security (During Hazard) Questions:

25. Does your home currently have electricity?

- a. Yes
- b. No

25a. If not, how many days have you been without electricity?

26. Does your household own an electricity generator?

- a. Yes
- b. No

26a. If yes, which type?

- a. Diesel
- b. Gasoline
- c. Natural Gas
- d. Solar

26b. If yes, do you have transportation to get fuel?

- a. Yes
- b. No

27. Are you charging important equipment?

- a. Yes
- b. No

27a. If yes, how?

28. Which of the following are you using to cook?

- a. Electric stove
- b. Gas stove
- c. Coal
- d. Wood
- e. Other

29. Has your fridge been affected by the [hurricane, earthquake, landslide, flood, etc.]?

- a. Yes
- b. No

29a. If yes, in what way?

Section 4: Water Security (During Hazard) Questions:

30. What is the main source of drinking water in your home?

- a. Puerto Rico Aqueduct and Sewer Authority (AAA)
- b. Community aqueduct
- c. Well water
- d. Ground water
- e. Fresh or spring water
- f. Bottled water or water vendor
- g. Other _____

30a. If the water source is at a distance, do you have the equipment and transportation to move the water?

- a. Yes
- b. No
- c. Does not apply

31. What is the main source of water for cleaning in your home?

- a. Puerto Rico Aqueduct and Sewer Authority (AAA)
- b. Community aqueduct
- c. Well water
- d. Ground water
- e. Fresh or spring water
- f. Bottled water or water vendor
- g. Other _____

31a. If the water source is at a distance, do you have the equipment and transportation to move the water?

- a. Yes
- b. No
- C. Does not apply

32. Do you own a water cistern?

- a. Yes
- b. No

33. Are you treating your water before drinking or eating? (e.g., chlorination, filtration, boiling)

- a. Yes
- b. No

33a. If yes, with what frequency?

34. Do you have sufficient water to meet the daily needs of your household?

- a. Yes
- b. No

Section 5: Food Security (During Hazard) Questions:

35. Where are you cooking food for your household?

- a. In the home
- b. Outside (i.e bbq)
- c. Communal kitchen
- d. Other

36. Have you been able to cook your normal meals in your home?

- a. Yes
- b. No

36a. If not, please explain:

37. Currently, are you able to get your groceries from your household's normal source?

- a. Yes
- b. No

37a. If no, why not?

38. Has your household been able to eat balanced meals, such as having a variety of fruits, vegetables, meats, grains, and other essential foods?

- a. Yes
- b. No

39. Since the [hurricane, earthquake, landslide, flood, etc.], did you or others in your household ever cut the size of your meals or skip meals? (Modified from USDA 6-item)

- a. Often true
- b. Sometimes true
- c. Never true
- d. Don't know
- e. Refuse to answer

39a. If true, why did your household have to cut or skip meals?

- a. Not enough money
- b. No electricity
- c. No access to food
- d. Other _____
- e. Refuse to answer

40. Since the [hurricane, earthquake, landslide, flood, etc.], has your household received any type of food delivery from the government, NGO's or faith-based organizations?

- a. Yes
- b. No

40a. If yes, who has done the delivery?

41. Do members of the household need specific foods due to health conditions, lifestyle or their religion?

- a. Yes
- b. No

41a. If yes, please elaborate:

42. Have members of your household been dependent on non-perishable foods?

- a. Yes
- b. No

Section 6: During Hazard FEW Combination Questions:

43. Has losing water access impacted the food your family can make and eat?
- a. We are not impacted
 - b. We are able to manage
 - c. We are surviving
 - d. Our health is at severe, even fatal, risk
44. Has losing electricity in your house and community impacted the food your family can make and eat?
- a. We are not impacted
 - b. We are able to manage
 - c. We are surviving
 - d. Our health is at severe, even fatal, risk
45. Has losing electricity in your house and community affected the amount of water you and your family have to drink each day?
- a. We are not impacted
 - b. We are able to manage
 - c. We are surviving
 - d. Our health is at severe, even fatal, risk
46. Has losing electricity in your house and community impacted the quality of water you and your family have to drink each day?
- a. We are not impacted
 - b. We are able to manage
 - c. We are surviving
 - d. Our health is at severe, even fatal, risk
47. How easily are you able to communicate with others in the community?
- a. No problems
 - b. Some issues, but nothing severe
 - c. We struggled to reach others
 - d. We were unable to communicate with others
8. Where are you receiving information about relief resources, such as food, water, or energy?

49. What is your main resource for learning about the [hurricane, earthquake, landslide, flood, etc.]?

50. Do you have any other information you would like to share about your experience with the [hurricane, earthquake, landslide, flood, etc.]?

C. After Survey

As a reminder, this survey is intended to be deployed between 6 months and a year following a hazard.

Instructions:

I will read each question to you and ask that you answer according to what mirrors your reality. If you wish to make a comment about any of the questions, you may do it and I will make a note of it. The survey will take 25-30 minutes.

Section 1: Socio-Demographic Questions

1. What is your gender?

- a. Female
- b. Male
- c. Nonbinary or gender non-conforming
- d. Trans or transgendered
- e. Other

2. What is your household composition (including yourself)?

a. Number of:

- ___ Female
- ___ Male
- ___ Other gender

b. Number of:

- ___ Infant (0 - 2)
- ___ Toddler (3 - 6)
- ___ Adolescent (7 - 12)
- ___ Teenager (13 - 17)
- ___ Adults (18 - 60)
- ___ Elder (> 60)

4. What is your employment status?
- a. Employed
 - b. Unemployed
 - c. Self-employed
 - d. Retired
5. Do you or anyone in your household receive government support? Check all that apply:
- ☐ Food stamps
 - ☐ Government provided health insurance, such as medicaid (Vital)
 - ☐ WIC
 - ☐ Social Security
 - ☐ Other: _____
 - ☐ Prefer not to answer
6. Does your household have reliable transportation?
- a. Own a vehicle or other motorized vehicle
 - b. Own a bike or other non-motorized vehicle
 - c. Able to get transportation through another person
 - d. Able to get transportation through public transportation
 - e. No transportation of your own nor an ability to access it
7. Do you have pets?
- a. If yes, how many: _____
 - b. If yes, what kind: _____
8. Do you have access to technology from communication? Check all that apply:
- ☐ Phone (landline)
 - ☐ Phone (cellphone, no smartphone)
 - ☐ Phone (smartphone, such as an iPhone)
 - ☐ Computer (laptop or desktop)
 - ☐ Television/TV
 - ☐ Radio
 - ☐ Home Internet Access

Section 2: Home Health (After Hazard) Questions:

9. Is the [hurricane, earthquake, landslide, flood, etc.] affecting the health of people in your household?
- a. Yes
 - b. No

9a. If yes, how is it affecting?

10. In the past 2 weeks, have you or someone in your household felt any of the following symptoms? Check all that apply:

- ☐ Little interest or pleasure in doing things
- ☐ You have felt down, depressed or hopeless
- ☐ Has not felt any of the above symptoms

11. In the past 2 weeks, have you or someone in your household felt any of the following symptoms? Check all that apply:

- ☐ Feeling nervous, restless, or on edge
- ☐ Not being able to stop worrying or not being able to control the worry
- ☐ Has not felt any of the above symptoms

12. Do you feel exhaustion or extreme tiredness?

- a. Yes
- b. No
- c. On occasion

13. Do you feel a desire to isolate and not have contact with others?

- a. Yes
- b. No
- c. On occasion

14. Do you feel impotent or hopeless?

- a. Yes
- b. No
- c. On occasion

15. Do you have trouble sleeping?

- a. Yes
- b. No
- c. On occasion

16. Is it difficult for you to concentrate?

- a. Yes
- b. No
- c. On occasion

17. Do you feel an uncontrollable profound sadness?

- a. Yes
- b. No
- c. On occasion

18. Does any member of the family have any disability?

- a. Yes
- b. No

18a. If yes, which?

18b. Do they require a caregiver?

- a. Yes
- b. No

19. Do any family members have issues with mobility, such as needing a wheelchair or other equipment, or being bedridden?

- a. Yes
- b. No

19a. If yes, please elaborate:

20. Is there a family member in need of special equipment? (e.g., oxygen tank)

- a. Yes
- b. No

20a. If yes, does this equipment require electricity?

21. Do you or anyone in your household have problems getting medication currently?

- a. Yes
- b. No

21a. If yes, which medications?

22. Are there any immediate health related needs in your household?

- a. Yes
- b. No

22a. If yes, please elaborate:

23. Is there any member of your household suffering from a new medical condition, not experienced before the [hurricane, earthquake, landslide, flood, etc.]?

- a. Yes
- b. No
- c. Refuse to answer

23a. If yes, please elaborate

24. Are any household members currently sick?

- a. Yes
- b. No
- c. Refuse to answer

24a. If yes, how many household members?

24b. If yes, what condition(s)?

Section 3: Energy Security (After Hazard) Questions:

25. Does your home currently have electricity?

- a. Yes
- b. No

25a. If not, how many days have you been without electricity?

26. Are you experiencing constant power outages?

- a. Yes
- b. No

26a. If yes, how many days a week does the electricity go out?

27. Does your household own an electricity generator?

- a. Yes
- b. No

27a. If yes, which type?

- a. Diesel
- b. Gasoline
- c. Natural Gas
- d. Solar

27b. If yes, do you have transportation to get fuel?

28. Are you charging important equipment?

- a. Yes
- b. No

28a. If yes, how?

29. Which of the following are you using to cook?

- a. Electric stove
- b. Gas stove
- c. Coal
- d. Wood
- e. Other

30. Has your fridge been affected by the [hurricane, earthquake, landslide, flood, etc.]?

- a. Yes
- b. No

30a. If yes, in what way?

Section 4: Water Security (After Hazard) Questions:

31. What is the main source of drinking water in your home?

- a. Puerto Rico Aqueduct and Sewer Authority (AAA)
- b. Community aqueduct
- c. Well water
- d. Ground water
- e. Fresh or spring water
- f. Bottled water or water vendor
- g. Other _____

31a. If the water source is at a distance, do you have the equipment and transportation to move the water?

- a. Yes
- b. No
- c. Does not apply

32. What is the main source of water for cleaning in your home?

- a. Puerto Rico Aqueduct and Sewer Authority (AAA)
- b. Community aqueduct
- c. Well water
- d. Ground water
- e. Fresh or spring water
- f. Bottled water or water vendor
- g. Other _____

32a. If the water source is at a distance, do you have the equipment and transportation to move the water?

- a. Yes
- b. No
- c. Does not apply

33. Do you own a water cistern?

- a. Yes
- b. No

34. Are you treating your water before drinking or eating? (e.g., chlorination, filtration, boiling)

- a. Yes
- b. No

34a. If yes, with what frequency?

35. Do you have sufficient water to meet the daily needs of your household?

- a. Yes
- b. No

Section 5: Food Security (After Hazard) Questions:

36. Where are you cooking food for your household?

- a. In the home
- b. Outside (i.e bbq)
- c. Communal kitchen
- d. Other

37. Have you been able to cook your normal meals in your home?

- a. Yes
- b. No

37ab. If not, please explain:

38. Currently, are you able to get your groceries from your household's normal source?

- a. Yes
- b. No

38a. If no, why not?

39. Has your household been able to eat balanced meals, such as having a variety of fruits, vegetables, meats, grains, and other essential foods?

- a. Yes
- b. No

40. Since the [hurricane, earthquake, landslide, flood, etc.], did you or others in your household ever cut the size of your meals or skip meals? (Modified from USDA 6-item)

- a. Often true
- b. Sometimes true
- c. Never true
- d. Don't know
- e. Refuse to answer

40a. If true, why did your household have to cut or skip meals?

- a. Not enough money
- b. No electricity
- c. No access to food
- d. Other _____
- e. Refuse to answer

41. Since the [hurricane, earthquake, landslide, flood, etc.], has your household received any type of food delivery from the government, NGO's or faith-based organizations?

- a. Yes
- b. No

41a. If yes, who has done the delivery?

42. Do members of the household need specific foods due to health conditions, lifestyle or their religion?

- a. Yes
- b. No

42a. If yes, please elaborate:

43. Have members of your household been dependent on non-perishable foods?

- a. Yes
- b. No

Section 6: After Hazard FEW Combination Questions:

44. Has losing water access impacted the food your family can make and eat?

- a. We are not impacted
- b. We are able to manage
- c. We are surviving
- d. Our health is at severe, even fatal, risk

45. Has losing electricity in your house and community impacted the food your family can make and eat?

- a. We are not impacted
- b. We are able to manage
- c. We are surviving
- d. Our health is at severe, even fatal, risk

46. Has losing electricity in your house and community affected the amount of water you and your family have to drink each day?

- a. We are not impacted
- b. We are able to manage
- c. We are surviving
- d. Our health is at severe, even fatal, risk

47. Has losing electricity in your house and community impacted the quality of water you and your family have to drink each day?

- a. We are not impacted
- b. We are able to manage
- c. We are surviving
- d. Our health is at severe, even fatal, risk

48. How easily are you able to communicate with others in the community?
- a. No issues or problems
 - b. Some issues, but nothing severe
 - c. We struggled to reach others
 - d. We were unable to communicate with others
49. Where are you receiving information about relief resources, such as food, water, or energy?
50. What is your main resource for learning about the [hurricane, earthquake, landslide, flood, etc.]?
51. Do you have any other information you would like to share about your experience with the [hurricane, earthquake, landslide, flood, etc.]?

V: Data Management and Analysis

Data Management and Analysis Do's:

- Find a method of organization that helps to keep all of the collected information in line.
 - a. To do this, organize by date, topic, or sub-population.
 - b. Ensure that the method that you are using is standardized—**do not change how you are organizing data without changing everything to match.**
 - c. It can be most helpful to organize this information in a virtual spreadsheet.

- Document all data in multiple ways and in multiple places. This gives you the ability to double-check the documentation and ensure that all of the information you have is accurate and representative of the truth.
 - a. This will also provide a back-up if for some reason there is an incident in which data in one location is lost.
 - b. To do this, keep a physical copy of responses in addition to a primary, virtual copy.

- Limit unnecessary access to data. Keep restrictions on who can access this information and how they engage with it—this will lessen the likelihood that bias or non-ethical practices in data presentation will occur.
 - a. To do this, keep physical copies of data in a secure location that only necessary individuals have access to.
 - b. For virtual copies, store in a secure, online location. For example, google forms and spreadsheets should be stored in a google drive folder that only necessary individuals have access to.

Data Management and Analysis Don't's:

- Falsify information. Ensure that you are reporting data that is accurate and representative of the truth.
- Forget the importance of the data. Use all data collected—do not collect responses and leave the information to sit. Combine the responses with those previously collected in order to analyze frequencies.
- Allow easy access to data. Making this information easily accessible increases the likelihood that an accidental or purposeful mistake will be made in analyzing or interpreting the information.
- Forget to enter all relevant information. This includes the date that data was collected and where it came from in addition to all collected information.

A. Analyzing Data with Google Forms

Finding trends, patterns, or relationships within the data is important to provide attention to a community problem. Following survey data collection, analyzing data in Google Forms can be done directly within the Google Forms interface or by exporting the data to Google Sheets for more in-depth analysis. Here's a detailed guide on how to analyze data in Google Forms:

1. Access the response spreadsheet: Open the Google Form for which you want to analyze the data. Click on the "Responses" tab at the top of the form editor. This will take you to the response spreadsheet associated with your form.
2. Explore the response summary: Within the response spreadsheet, you'll see a summary of the responses. It displays the timestamp of each response and the values provided for each question in separate columns. Take a look at the summary to get a general understanding of the data.
3. Use built-in data analysis features: Google Forms provides some built-in features for basic data analysis. For numerical questions, you can click on the small green icon at the top of the numerical response column to see summary statistics like average, median, mode, minimum, and maximum values. This feature is available for numerical questions with at least three responses.
4. Filter and sort responses: To focus on specific subsets of responses, you can use the filter and sort functionalities. Click on the filter icon in the column headers to apply filters based on specific criteria. You can also click on the column header to sort the responses in ascending or descending order.

5. Use formulas for analysis: If you need to perform more advanced calculations or analysis, you can export the data to Google Sheets and use their formulas. Click on the "View responses in Sheets" button at the top of the response spreadsheet to open the responses in Google Sheets. Explore and analyze the data in Google Sheets: In Google Sheets, you have access to a wide range of data analysis functions and tools. Use formulas like AVERAGE, COUNT, SUM, and IF to calculate summary statistics, count responses, or perform conditional calculations. You can create tables, charts, and graphs to visualize the data and identify patterns.

6. Draw insights and make conclusions: Analyze the data in Google Sheets to draw meaningful insights and conclusions. Look for trends, patterns, or relationships within the data and relate them to your research objectives or survey goals.

7. If you're working with a team or need to share the analysis with others, you can easily share the Google Sheets document with them. Adjust the sharing settings to allow collaborators to view, edit, or comment on the analysis. Collaboration enables multiple perspectives and can enhance the accuracy and interpretation of the analysis. Remember to save your work regularly and make backups of the data to prevent any accidental loss. Additionally, Google Forms and Sheets offer a wide range of features and functionalities, so feel free to explore and experiment to find the best methods and tools for your specific analysis requirements.

B. Identifying Themes from Open-Ended Questions

Theme identification is a method used to identify and analyze patterns within textual data. Identifying themes in open-ended survey questions is an important step in understanding people's experiences. Here is a step-by-step guide to help you conduct theme identification:

1. Familiarize yourself with the data: Read through all the open-ended survey responses to get a general understanding of the content and context. Take note of any initial observations or patterns that you notice.
2. Develop a coding scheme: Create a list of categories or classifications (e.g. food insecurity, diabetes) that you anticipate might emerge from the data. These themes should capture the main ideas or topics discussed in the responses. You can have a predefined coding scheme to guide your analysis or you can identify through repetition the categories that emerge during the process.
3. Code the data: Go through each survey response individually and assign relevant labels (also known as codes) to specific sections of text that relate to each theme. Make sure to capture the essence of each response and assign multiple codes if necessary to reflect different themes within a single response.
4. Group similar codes: After coding all the responses, review your codes and group them based on similarity or relatedness. Look for patterns, commonalities, or recurring themes across the responses. This step involves a process of synthesizing and condensing the coded data.

5. Refine and revise themes: Analyze the grouped codes and refine them into broader and more meaningful themes. Identify overarching categories that encapsulate multiple codes. You may need to rename or merge themes, split themes into subthemes, or discard themes that do not contribute significantly to the analysis.

6. Develop definitions and examples: For each identified theme, create clear definitions to explain their meaning and provide examples from the survey responses to illustrate what each theme represents. This will help ensure consistency and provide a reference for future analysis or discussions.

7. Analyze and interpret the themes: Once you have finalized coding, look for patterns, trends, or insights that emerge from the responses. Consider the frequency, depth, and context of the themes to gain a comprehensive understanding of the survey data.

8. Present the findings: Summarize the themes and their key findings in a clear and concise manner. You can use quotes or excerpts from the survey responses to support your analysis. Visual aids such as charts, graphs, or word clouds can also be used to present the themes in a visually appealing and easily understandable format.

Remember that theme identification is an iterative process, and it may require multiple iterations of coding, refining, and analyzing to ensure comprehensive and accurate representation of the data.

VI. Sharing Findings

To support action that can address issues of food, energy and/or water insecurity in disasters contexts, survey results can be taken to various institutions. Here are some institutions that can be visited:

1. **Government agencies:** Community leaders can share the survey results with relevant government agencies, such as the Puerto Rico Department of Housing, Department of Education, Department of Health, or Department of the Family. These agencies can use the data to inform policy decisions, allocate resources, and implement programs that address the identified social issues.
2. **Nonprofit organizations:** Community leaders or public health practitioners can collaborate with local nonprofit organizations working in areas related to the survey results. Nonprofits focusing on education, healthcare, poverty alleviation, environmental issues, or social justice can utilize the survey findings to advocate for change, shape their programs and initiatives, and seek funding opportunities.
3. **Community-based organizations:** There are numerous community-based organizations in Puerto Rico that work directly with residents to address local needs and drive social change. Sharing the survey results with these organizations can help them understand the community's perspectives, design targeted interventions, and mobilize resources to address the identified issues.

4. Educational institutions: Universities, colleges, and research institutes in Puerto Rico can be valuable partners in analyzing and disseminating survey results. Community leaders or public health practitioners can collaborate with faculty members, researchers, and students to further investigate the survey data, publish research papers, and present the findings in academic conferences, raising awareness and promoting discussion on social change.

5. Media outlets: Sharing survey results with local newspapers, radio stations, television channels, and online news platforms can amplify the voice of the community. Community leaders or public health practitioners can work with journalists and media outlets to highlight the survey findings, increase public awareness about the social issues, and foster public dialogue that leads to social change.

6. Professional associations and advocacy groups: Puerto Rico has professional associations and advocacy groups representing various sectors, including teachers, healthcare workers, social workers, lawyers, and environmentalists. Community leaders or public health practitioners can approach these organizations to share survey results, collaborate on advocacy campaigns, and leverage their expertise and networks to advocate for policy reforms and social change.

7. Funding agencies and philanthropic organizations: Survey results can be presented to funding agencies and philanthropic organizations that support initiatives aimed at social change. Community leaders or public health practitioners can use the data to demonstrate the need and impact of their work, increasing the chances of securing financial support for programs and projects that address the identified social issues. Remember, when sharing survey results with institutions, it is important to provide clear and concise summaries of the findings, along with any supporting data or analysis. Presenting the information in a compelling and accessible format will enhance the likelihood of engagement and collaboration with these institutions in driving social change in Puerto Rico.

VII. Important Terms and Definitions

Community-based research– research studies which focus on social, structural, and physical environmental inequities through active involvement from community members, organizational representatives, and researchers in all aspects of the research process.

Food security– Access by all people at all times to enough food for an active, healthy life.

Water security– The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.

Energy security– having assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet mission essential requirements.

Health– a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Community health resilience– the ability for a community to withstand, adapt, and recover from public health risks.

Community health– the health status of a defined group of people and the actions and conditions both private and public, to promote, protect, and preserve their health.

Assessment– the systematic collection, review, and use of information about community services undertaken for the purpose quality improvement, planning, and decision-making.

Tool kit– An action-oriented compilation of related information, resources, or tools that guide users to develop a plan or organize efforts.

Methodology– a system of methods used in a particular area of study or activities.

Method– the strategies, processes, or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic.

Process– a series of actions or steps taken in order to achieve a particular end.

Validity– How well the results among study participants represent true findings among similar individuals outside of the study.

Compounded hazards– Events where more than one hazard interact and cause multiplicatively destructive consequences.

Disaster– Serious disruptions to the functioning of a community that exceed its capacity to cope using its own resources.

Cascading hazards– Extreme events in which cascading effects increase in progression over time and generate unexpected secondary events of strong impact.

Social infrastructure– The networks of spaces, facilities, institutions, and groups that create affordances for social connection.

Physical infrastructure– the basic physical structures required for an economy to function and survive.

Social Capital– a collective asset in the form of shared norms, values, beliefs, trust, networks, social relations, and institutions that facilitate cooperation and collective action for mutual benefits.

Participatory mapping– a technique of inclusive map-making in which researchers and community members create maps collectively.

Co-creation– a joint effort of citizens and public sector professionals in the initiation, planning, design, and implementation of public services.

Data analysis– the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data.

VIII. Invitation to Participate Template

In order to gain participation in a study, it is important to invite individuals to participate by providing them with as much information as you can. This includes explaining the goal of the study, the expectations, and the ethical considerations (i.e. voluntary participation and guarantee of confidentiality). Below is an example of a letter that could be used to invite an individual to participate in the study.

[Your Name]

[Your Title/Position]

[Your Institution/Organization]

[Date]

Dear [Participant's Name],

Invitation to Participate in a Study on Household Experiences with Food, Energy, and Water Insecurity and Related Health Concerns [before |during | after a disaster]

I hope this letter finds you in good health and high spirits. I am writing to invite you to participate in an important research study conducted by [Your Institution/Organization]. We are investigating the experiences of households like yours regarding food, energy, and water insecurity, as well as the potential impact on health. Your participation in this study will contribute to a better understanding of these critical issues and help us develop effective strategies to address them.

Purpose of the Study: The primary goal of this study is to explore the challenges and concerns faced by households regarding food, energy, and water insecurity. We aim to investigate the various dimensions of these insecurities, including their impact on daily life, and potential health implications. By examining these issues, we hope to identify interventions and policies that can mitigate the negative effects on individuals, families, and communities.

Study Details: If you choose to participate, you will be asked to complete a survey/questionnaire that will inquire about your household's experiences with food, energy, and water insecurity. The survey will cover topics such as access to affordable and nutritious food, availability of energy resources, water quality and availability, and any health concerns you may have encountered due to these insecurities. The survey will take approximately [estimated time] to complete and will be entirely anonymous to ensure confidentiality.

Benefits of Participation: Your participation in this study will significantly contribute to expanding our knowledge and understanding of household experiences with food, energy, and water insecurity. By sharing your experiences, you will help us identify the specific challenges faced by households and inform the development of targeted interventions and policies. Additionally, you will have an opportunity to contribute to the overall improvement of public health strategies aimed at addressing these insecurities.

Confidentiality and Ethical Considerations: Please be assured that all information you provide will be treated with the utmost confidentiality. Your responses will be anonymized, and no personally identifiable information will be collected or shared. The data collected will be used solely for research purposes and will be stored securely in accordance with [institution/organization] guidelines and relevant data protection regulations.

Participation is voluntary, and you have the right to withdraw from the study at any time without penalty or prejudice. Your decision to participate or decline will in no way affect any existing relationships or benefits you receive from [institution/organization].

Next Steps: If you are interested in participating in this study, we will provide you with detailed instructions on how to access the survey/questionnaire. If you have any questions or concerns about the study, please feel free to contact me at [email address] or [phone number].

Thank you for considering this invitation to participate in our study. Your involvement is crucial to the success of our research and the potential impact it can have on addressing food, energy, and water insecurities. We genuinely appreciate your time and willingness to contribute to this important endeavor.

Sincerely,

[Your Name] [Your Title/Position] [Your Institution/Organization]