

SUMMARY OF RESPONSES

SURVEY ON CLIMATE CHANGE IMPACTS IN KAUA'I

**Kaua'i Climate Adaptation Plan
June 2, 2022**

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SURVEY OVERVIEW

The County of Kauaʻi is in the process of creating a Climate Adaptation Plan (CAP). The CAP is a roadmap for how the community will prepare for the impacts of climate change and natural hazards on ecosystems, infrastructure, public health, and the economy.

The Community Survey on Climate Change Impacts in Kauaʻi (survey) was open from March through mid-May 2022. The purpose of the survey was to gather information about community members' opinions of and experiences with the impacts of climate change island wide and in their specific communities. If visitors took the survey, they were redirected to a separate set of survey questions than current and former residents.

SURVEY METHODOLOGY AND PARTICIPATION

The survey was developed by County of Kauaʻi staff and the CAP consultant team. In developing the survey, the team considered:

- Understanding of climate change, related hazards, and important assets: The survey asks specifically about knowledge of climate change, most concerning hazards, and most important assets island-wide and in the participant's own community.
- Creating a tool to maximize engagement: The survey was developed to be short to maximize complete submissions and to not overwhelm participants.

The survey questions are included in Appendix B.

Sampling

This survey was completed by a non-randomized sample (often called a convenience sample) of people who live, work, go to school, or spend time in the County of Kauaʻi. A non-randomized sample is commonly used to understand the range of perspectives and experiences of a group of people ("population"). Data from non-randomized samples are typically considered more reliable (i.e., more generalizable to the larger population) when they are "triangulated" or validated through additional sources. Results from this survey will be considered alongside data from other CAP community engagement, including talk stories, interviews, Youth Climate Summit, and community meetings to inform decision-making.

Distribution and Outreach Methods

The survey was available to take online using the SurveyMonkey platform. The project team developed several outreach graphics and materials, such as social media images and flyers, which were distributed through various methods, including but not limited to:

- Internet-Based Outreach: County’s GovDelivery listservs; CAP Project Website; County’s social media accounts (Facebook and Instagram)
- In-Person Outreach: pop-ups at the Līhu’e Night Market; virtual and in-person open houses; Youth Climate Summit¹
- Print-Based Outreach: flyers at bus stops; *The Garden Isle* newspaper ad.

Demographic Characteristics of Survey Participants

This document summarizes the 411 unique survey responses.

The most represented age groups in the survey results are youth (under 18) (23% of respondents), people 41-60 years old (27%), and people 61-75 years old (28%). Of the people who wished to specify, 54% of respondents identify as female, 41% identify as male, and 5% identify as non-binary, transgender, gender non-conforming, or another gender identity.

96% of respondents are current county residents, and 2% are past residents. The geographic representation of respondents is spread evenly across North Shore, East Kaua’i, South Kaua’i, and West Kaua’i (each comprised 21 - 24% of respondents). Līhu’e is underrepresented; only 10% of respondents live there even though it is the most populous planning area in the county.

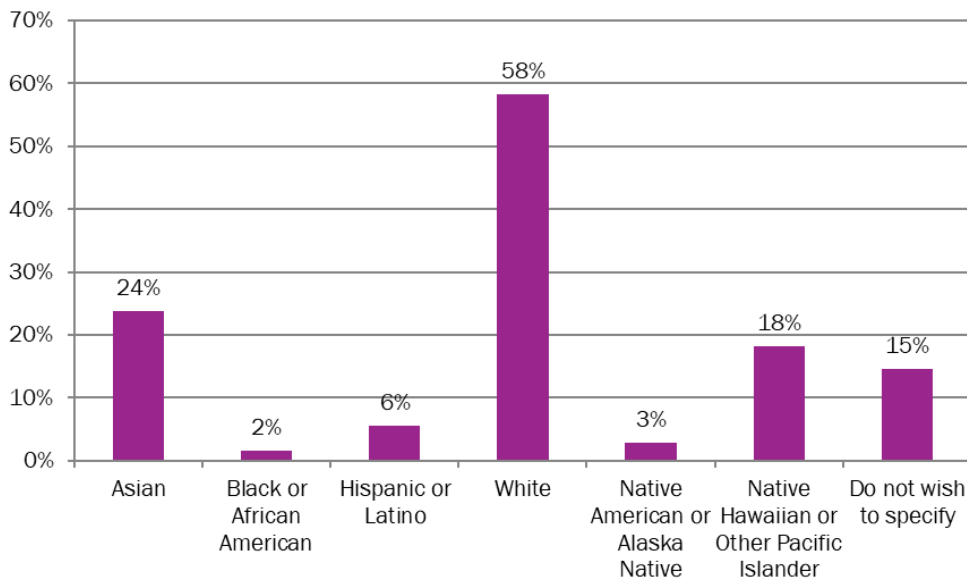
The 3% of respondents who are not current or past county residents were routed to a different set of questions. These visitors are from other islands (Hawaii and Oahu) and from the continental U.S. (Washington and Minnesota). Some respondents accidentally took the non-resident version of the survey, as they stated in later questions that they do in fact live on Kaua’i.

A majority of participants identify as white (58%), with Asian (24%) and Native Hawaiian and Other Pacific Islander (18%) as the second and third most represented groups² (Figure 1). Of those who identify as Native Hawaiian and Other Pacific Islander, 80% identify as Native Hawaiian. 20% identify as Samoan, Micronesian, Filipino/Hawaiian Filipino, Hawaiian Portuguese, or Tahitian.

¹ Several survey responses from the Youth Climate Summit were recorded on hard paper copies and transferred to SurveyMonkey by County staff.

² The survey utilized the racial and ethnic group designations used in the Census. However, the results from this survey do not align with Census data because respondents were allowed to check all races that apply, whereas the Census only allows people who identify as multiple races to select “Two or more races.”

Figure 1. Race and Ethnicity of Participants



RESULTS

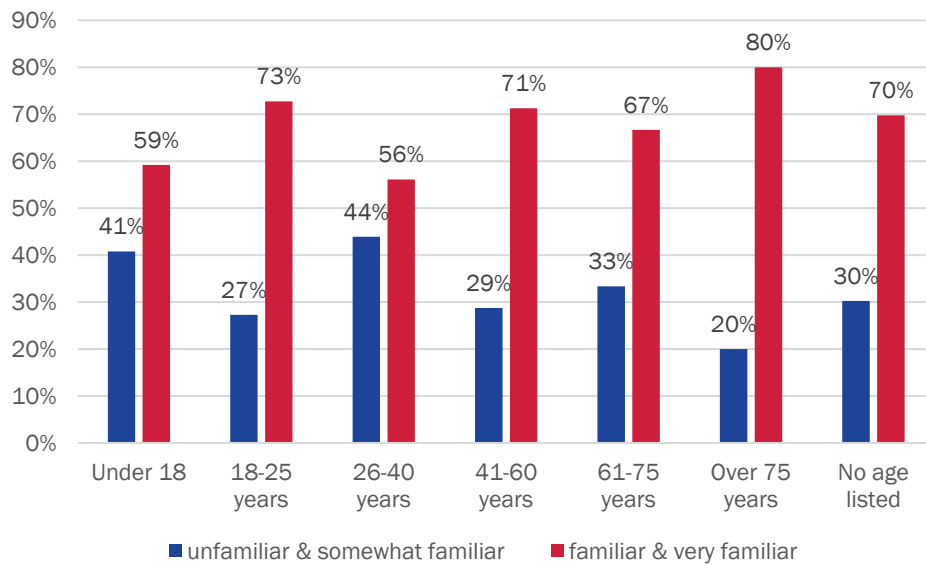
Climate Change Impacts Island Wide

Understanding of climate change

A majority of respondents (80%) believe that the climate in Kauaʻi is changing due to human activities. This is relatively consistent across age groups.

Two thirds (66%) of respondents have a decent or strong understanding of the effects of climate change on the island. Youth (respondents under 18) and respondents aged 26-40 self-identified as being less familiar with climate change than people in middle and older age groups (Figure 2).

Figure 2. Understanding of Climate Change



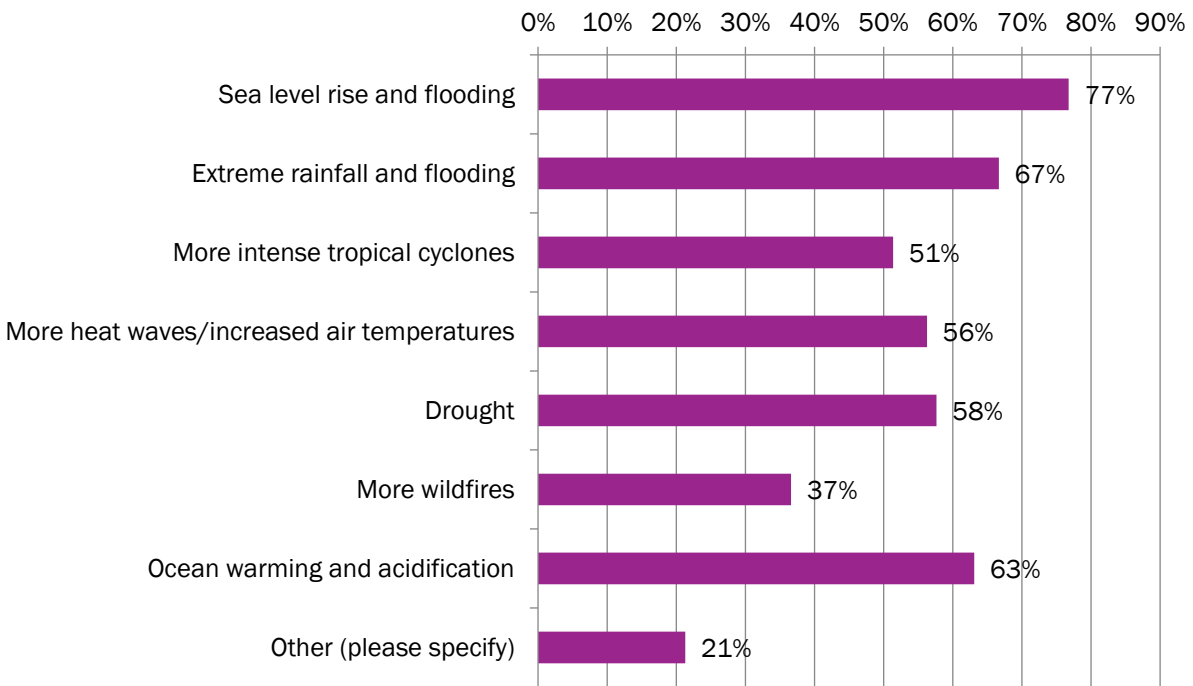
Island wide climate change impacts

The most concerning climate change impact for respondents is sea level rise, which was chosen by 77% of respondents (Figure 3). Extreme rainfall and flooding (67%) and ocean warming and acidification (63%) are the second and third most concerning. Respondents are least concerned about wildfires, which only 37% of people selected. These priorities were relatively consistent across all age groups. However, youth respondents (under 18) were the only group that identified more heat waves as one of their top three biggest concerns. Respondents over 75 were the only group to select more intense tropical cyclones as a main concern.

21% of respondents also described other climate impacts they are concerned about; however, most answers seem to apply more to the next question about resources and assets. The most common themes were:

- Loss of habitat and native species
- That they are not concerned about climate change or it is not real
- Concern for local agriculture, taro farming, and salinity/saltwater intrusion on agriculture
- Coastal erosion
- Access to potable water

Figure 3. Most Concerning Climate Change Impacts Island Wide

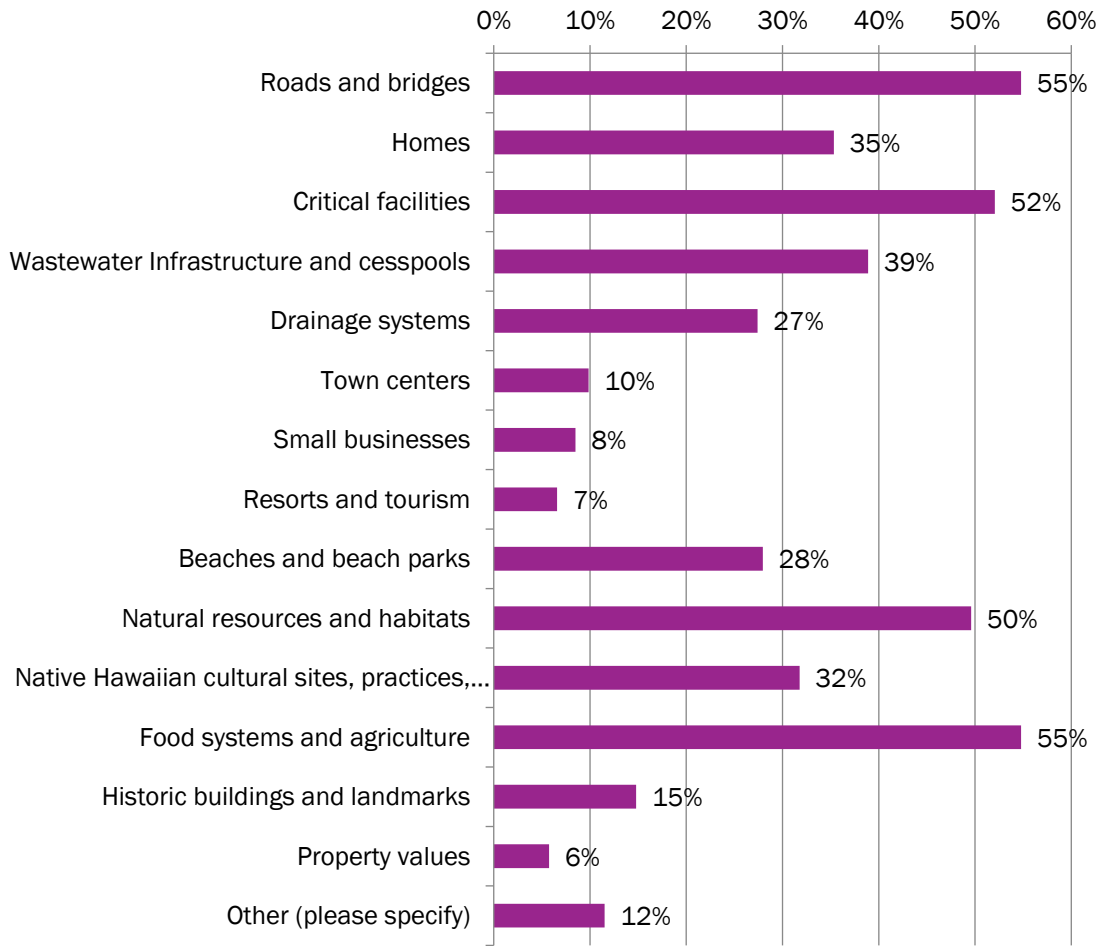


Island wide resources and assets to preserve

Respondents think food systems and agriculture (55%); roads and bridges (55%); critical facilities (52%); and natural resources and habitats (50%) are the most important resources and assets to preserve from the impacts of climate change island wide (Figure 4). Assets related to towns and economic factors – property values, resorts and tourism, small businesses, and town centers – are the least important. The responses were relatively consistent across all age groups. Interestingly, youth and respondents between 18-25 were the only groups that selected homes as one of the assets they are most concerned about.

12% of respondents described other climate change impacts they are concerned about. A majority of the answers are either about wanting to select all of the resources/assets, or that they do not believe in climate change and its impact to the resources/assets listed.

Figure 4. Most Important Assets to Preserve Island Wide

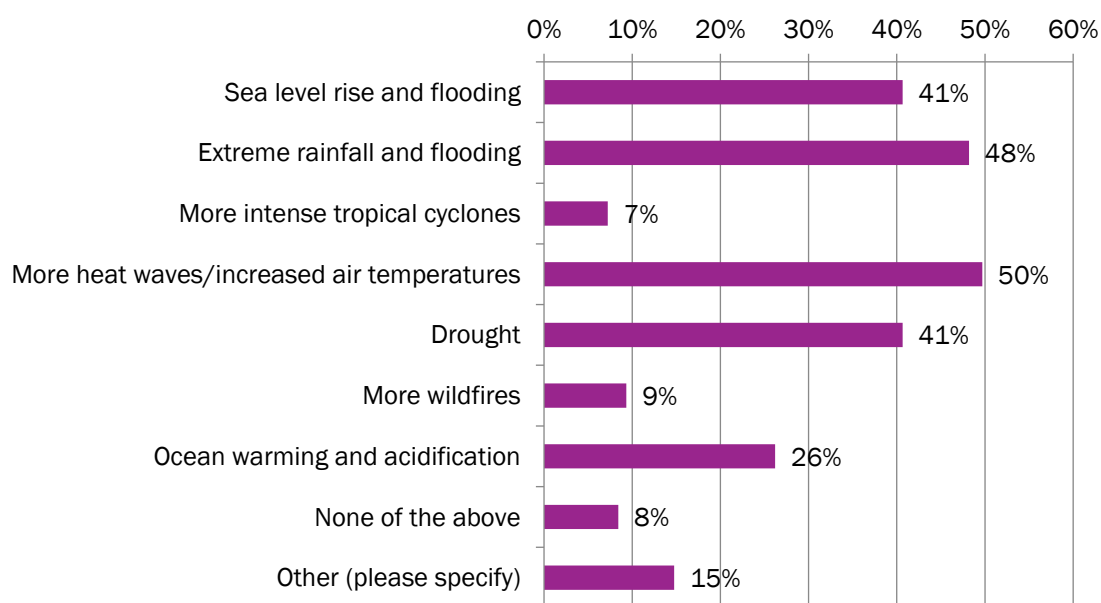


Climate Change Impacts in Your Community

Climate change impacts observed at the community level

More heat waves/increased air temperatures is the climate change impact that most people are already experiencing in their communities (selected by 50% of respondents) (Figure 5). Extreme rainfall and flooding, sea level rise and flooding, and drought are the other top answers. 15% of respondents described other climate change impacts they have observed in their communities. The most common response was that people have observed coastal erosion. A handful of respondents have noticed severe impacts to wildlife and native plants. Others have not noticed changes (some due to being a newer resident), and others do not believe the changes exist or have to do with climate change.

Figure 5. Climate Change Impacts Observed In their Community



There were some distinctions among impacts observed in different parts of the island:

- **North Shore:** The top climate impacts experienced by residents of the North Shore are extreme rainfall and flooding (27%), drought (17%), and sea level rise (17%).
- **East Kaua'i:** The top climate impacts experienced by residents of East Kaua'i are extreme rainfall and flooding (22%), sea level rise (19%), and more heat waves/increased air temperatures (18%).
- **Līhu'e:** The top climate impacts experienced by residents of Līhu'e are more heat waves/increased air temperatures (21%), extreme rainfall and flooding (20%), and sea level rise (20%).
- **South Kaua'i:** The top climate impacts experienced by residents of South Kaua'i are more heat waves/increased air temperatures (24%), extreme rainfall and flooding (23%), and drought (21%).
- **West Kaua'i:** The top climate impacts experienced by residents of West Kaua'i are more heat waves/increased air temperatures (29%), drought (19%), and sea level rise (17%).

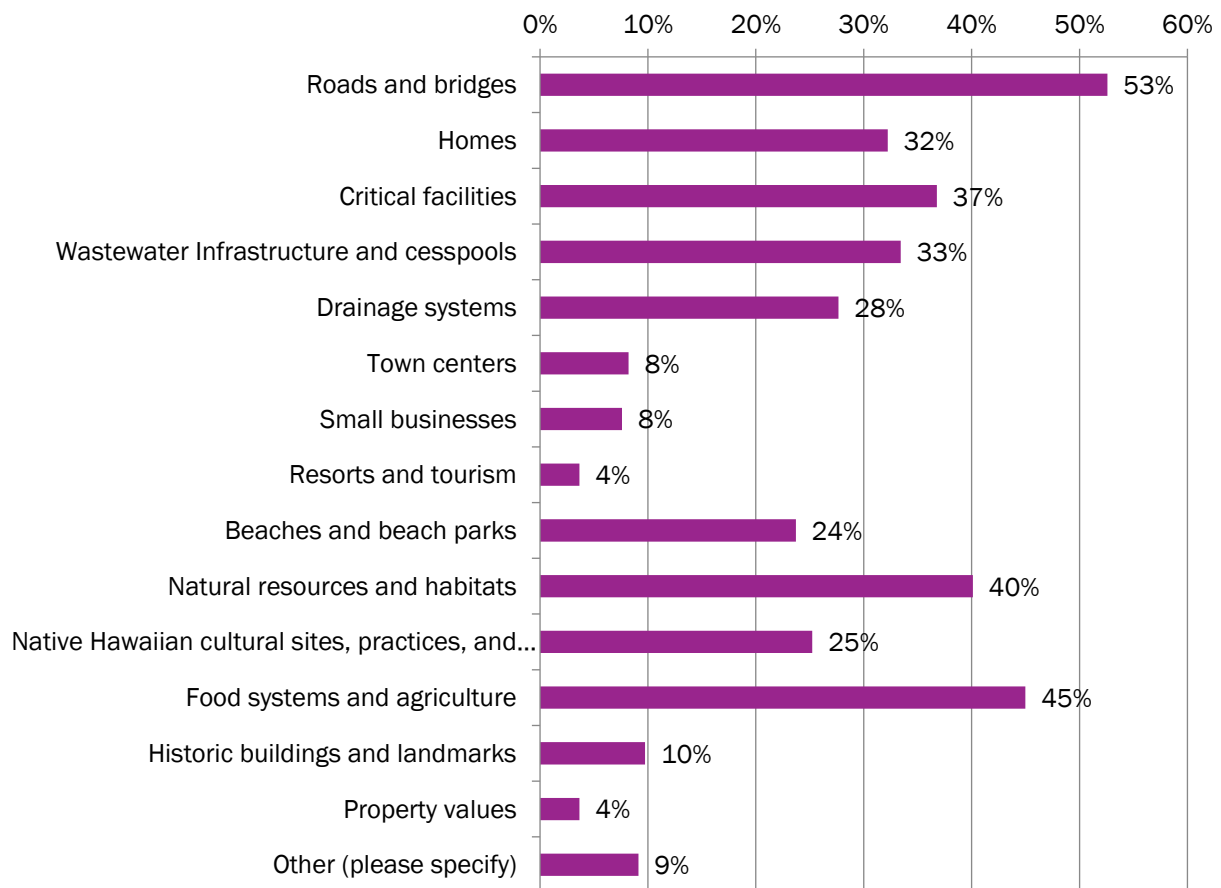
(See Appendix A for the table of results by planning area).

Community resources and assets to preserve

The most important resources and assets to preserve from the impacts of climate change in respondents' own communities are consistent with their priorities island wide. Roads and bridges are the highest priority to preserve from climate change (53%), followed by food systems and agriculture (45%) and natural resources and habitats (40%). The results were relatively consistent among the planning areas (see Appendix A for the table of results by planning area).

9% of respondents described other assets and resources they are concerned about. Other than the responses wanting to select all of the above or believing that climate change does not have to do with the condition of these assets, common answers had to do with water, biodiversity/plants and animals, and critical infrastructure (including levies, roads, dams and bridges).

Figure 6. Most Important Assets to Preserve in their Community



Steps being taken in their community to prepare for climate change impacts

The largest portion of respondents to this question either didn't know of any climate change preparation in their community, have seen no preparation, or do not believe in climate change. Of those who did know of community action or are taking action personally, the following key themes emerged. Many comments covered multiple topics.

Table 1. Ongoing Climate Change Preparation

Theme	#
Growing their own food; community garden; subsistence food gathering	35
Reducing overall waste / plastic waste; recycling	30
Educating themselves and others	30
Gathering emergency supplies; general personal emergency preparedness	17
Driving less	17
Conserving water	13
Conserving energy	13
Have or support solar / renewable energy	13
Use an EV or hybrid car	11
Buying local (especially food)	11
Using public and active transportation	8
Composting	7

Climate Change Mitigation

Participants have a variety of ideas for actions the County can take to help mitigate climate change. Many comments covered multiple topics, but the ideas that came up the most commonly are listed below. Note that some themes listed are adaptation strategies rather than GHG mitigation strategies. Responses of “don’t know” or “n/a” were also common.

Table 2. Climate Change Mitigation Ideas

Theme	#
Limit tourism; change the nature of tourism; move the economy away from tourism	21
Enact zero waste policies; minimize or ban plastic; reduce trash	20
Reduce gas cars; increase or mandate EVs ; EV charging	20
Support local agriculture; food self-sufficiency	19
Improve public transportation and active transportation	18
Community education; more ways to get involved	17
Increase recycling	14
Limit building in at-risk coastal areas	13
Plant trees; protect trees; reforestation	11
Cesspool conversion; wastewater management	11
Develop alternative routes inland; move coastal roads and bridges	8
Protect / armor coastal roads	8

Non-resident Survey

Around 5 non-county residents took the survey, so their responses are not representative of any larger trends. Of those who responded, two are staying in short-term rental, and two are staying in a home they own. Respondents are familiar with the effects of a changing climate in Kaua’i (only one answered that they have no understanding) and are informed of what to do in the case of a hazard event (no respondents said they were completely uninformed).

Appendix A: Detailed Tables

APPENDIX A: RESULTS BY PLANNING AREA

The following are the results for the question “What climate change impact are you already seeing in your community?” by planning area. Respondents were allowed to select all that apply.

Plan. Area	Sea level rise and flooding	Extreme precipitation	More intense tropical cyclone	More heat waves	Drought	More wildfires	Ocean warming and acidification	Other
North Shore	17%	27%	3%	15%	17%	2%	11%	8%
East Kauai	19%	22%	3%	18%	15%	3%	13%	7%
Lihue	20%	20%	7%	21%	13%	3%	13%	5%
South Kauai	14%	23%	2%	24%	21%	4%	8%	4%
West Kauai	17%	7%	3%	29%	19%	8%	10%	7%



The following are the results for the question “What assets are the most important to preserve from the impacts of climate change in your community?” by planning area. Respondents were instructed to select their top three.

Plan. Area	Roads and Bridges	Homes	Critical Facilities	Wastewater Infrastructure	Drainage Systems	Town Centers	Small Businesses	Resorts and Tourism	Beaches and Beach Parks	Natural Resources	Native Hawaiian Resources	Food System	Historic Buildings	Property Values	Other
North Shore	17%	11%	9%	9%	8%	3%	2%	1%	6%	9%	5%	12%	4%	1%	3%
East Kauai	16%	5%	8%	12%	9%	1%	2%	0%	7%	12%	7%	14%	2%	0%	3%
Lihue	14%	11%	15%	10%	8%	1%	2%	1%	6%	11%	6%	9%	3%	1%	3%
South Kauai	12%	9%	9%	10%	9%	2%	2%	1%	8%	13%	8%	12%	2%	1%	2%
West Kauai	13%	11%	13%	6%	5%	4%	2%	2%	6%	10%	8%	13%	3%	2%	2%

Appendix B: Survey Questions

APPENDIX B: COMMUNITY SURVEY ON CLIMATE CHANGE IN KAUA‘I

The County of Kaua‘i is in the process of developing a Climate Adaptation Plan. This exciting initiative is a roadmap for how the community will prepare for the potential impacts of natural hazards and climate change on ecosystems, infrastructure, public health, and our economy.

This survey is designed to gather information about community members’ opinions of and experiences with the impacts of climate change. Your answers are anonymous, and you can also skip any questions. There are no right or wrong answers – we want to know about your perspectives and experiences.

Key Definitions:

Climate Change: Changes in local temperature, precipitation, winds, and sea level due to rising global air and ocean temperatures.

Climate Hazards: natural events (such as storms and floods) and long-term changes (such as coastal erosion) which are more frequent and/or intense due to climate change.

Pre-Screen

1. Are you a resident of the County of Kaua‘i? (Check one)
 - a. Current resident
 - b. Past resident
 - c. Not a resident

Climate Change Impacts – Islandwide

2. Do you think the climate in Kaua‘i is changing? (Check one)
 - a. Yes
 - b. No
 - c. I don’t know
3. How familiar are you with the effects of a changing climate in Kaua‘i? (Check one)
 - a. Unfamiliar – I have no understanding
 - b. Somewhat familiar- I know a little bit
 - c. Familiar – I have a decent understanding
 - d. Very familiar- I know a lot

4. Which of the following possible impacts of climate change on the island as a whole are you most concerned about? (Check all that apply)
 - a. Sea level rise and flooding
 - b. Extreme rainfall and flooding
 - c. More intense tropical cyclones
 - d. More heat waves/increased air temperatures
 - e. Drought
 - f. More wildfires
 - g. Ocean warming and acidification
 - h. Other

5. What resources and assets do you think are most important to preserve from the impacts of climate change? (Choose up to three)
 - a. Roads and bridges
 - b. Homes
 - c. Critical facilities (schools, hospitals, airports, harbors)
 - d. Wastewater Infrastructure and Cesspools
 - e. Drainage systems
 - f. Town centers
 - g. Small businesses
 - h. Resorts and tourism
 - i. Beaches and beach parks
 - j. Natural resources and habitats
 - k. Native Hawaiian cultural sites, practices, and resources
 - l. Food systems and agriculture
 - m. Historic buildings and landmarks
 - n. Property values
 - o. Other

Climate Change Impacts – In Your Community

6. What part of the island do you live in? (Check one)
 - a. North Shore
 - b. East Kaua'i
 - c. Lihue
 - d. South Kaua'i
 - e. West Kaua'i

7. What town do you live in? (Open Ended)

8. Which of the following climate change impacts are you already seeing in your community? (Check all that apply)
 - a. Sea level rise and flooding
 - b. Extreme rainfall and flooding
 - c. More intense tropical cyclones
 - d. More heat waves/increased air temperatures
 - e. Drought
 - f. More wildfires

- g. Ocean warming and acidification
 - h. Other: _____
9. What resources and assets in your community do you think are most important to protect from the impacts of climate change? (Choose up to three + comment option to identify specific assets)
- a. Roads and bridges
 - b. Homes
 - c. Critical facilities (schools, hospitals, airports, harbors)
 - d. Wastewater Infrastructure and Cesspools
 - e. Drainage systems
 - f. Town centers
 - g. Small businesses
 - h. Resorts and tourism
 - i. Beaches and beach parks
 - j. Natural resources and habitats
 - k. Native Hawaiian cultural sites, practices, and resources
 - l. Food systems and agriculture
 - m. Historic buildings and landmarks
 - n. Property values
 - o. Other
10. Are there steps that you and/or members of your community have taken to prepare for impacts of climate change? (open ended)
11. What steps would you like to see the County take to mitigate the impacts of climate change? (open ended)

Detailed Demographics

This section of this survey asks questions about your personal background. This information helps us understand who responded to the survey and who we still need to talk with in our community.

12. How long have you lived in the County of Kaua'i? (Check one)
- a. I am a lifelong resident
 - b. I recently moved here from a different county in Hawaii
 - c. I recently moved here from the mainland
 - d. I recently moved here from a foreign country
 - e. I am a former resident
13. What is your age group? (Check one)
- a. Under 18
 - b. 18-25 years
 - c. 26-40 years
 - d. 61-75 years
 - e. Over 75 years
 - f. I do not wish to specify

14. With which race or ethnic group(s) do you most identify? (select all that apply)
- a. Asian or Asian American
 - b. Black or African American
 - c. Hispanic or Latino
 - d. White or Caucasian
 - e. Native American or Alaska Native
 - f. Native Hawaiian or Other Pacific Islander
 - g. I do not wish to specify
15. If you identify as Native Hawaiian or other Pacific Islander, what race or ethnic group do you identify with? (Select all that apply; skip if N/A)
- a. Native Hawaiian
 - b. Samoan
 - c. Tongan
 - d. Micronesian
 - e. Melanesian
 - f. Other (please specify)
16. What gender do you identify with? (Select all that apply)
- a. Male
 - b. Female
 - c. Non-Binary
 - d. Transgender
 - e. Gender Non-Conforming
 - f. I do not wish to specify
 - g. Other (please specify)
17. If you would like to be notified about the CAP and other ongoing County planning projects, please provide your email address.
- E-mail address: _____(open answer box)_____

Non-resident survey

18. Where do you live?
19. What part of the island are you staying in?
20. What type of habitation are you staying in?
- a. Hotel or resort
 - b. Short-term rental (such as Airbnb)
 - c. Staying with family or friends
 - d. Camping
 - e. Other (please specify)
21. How familiar are you with the effects of a changing climate in Kaua'i? (Check one)
- a. Unfamiliar – I have no understanding
 - b. Somewhat familiar – I know a little bit

- c. Familiar – I have a decent understanding
 - d. Very familiar – I know a lot
22. How informed are you of what to do in the case of a hazard event (such as an extreme storm or flood)?
- a. Uninformed – I have no understanding
 - b. Somewhat informed – I know a little bit
 - c. Informed – I have a decent understanding
 - d. Very familiar – I know a lot