How a Changing Climate is Affecting Farmworkers in the Pájaro Valley

with Policy Recommendations

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REGENERACION

PAJARO VALLEY CLIMATE ACTION

California State University
MONTEREY BAY

Implications of Climate Change for Farmworker Policy: How a Changing Climate is Affecting Farmworkers in the Pájaro Valley

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Introduction

Pájaro Valley is an agricultural community comprised primarily of low-income, migrant farmworkers. In 2017-18, Regeneración: Pájaro Valley Climate Action developed a survey to better understand how the community of Pájaro Valley is being affected by climate change and other environmental issues as well as to seek solutions that support the wants and needs of the community. For the purposes of this report, the survey used by Regeneración has defined the following locations as a part of the Pájaro Valley: Freedom, Interlaken (including Pinto Lake), Las Lomas, Pájaro, Watsonville, and the geographic region near Pájaro west of Highway 1. A total of 324 people participated in the survey through in-person (186 surveys) or on-line (138 surveys). Survey results were initially analyzed by Dr. Shishir Mathur at San Jose State University, and then subsequently further analyzed by Dr. Victoria Derr and her ENSTU 350 Research Methods class at CSU Monterey Bay in Fall 2018.

This policy analysis examines responses among those who classified themselves as agricultural workers, specifically analyzing their responses toward environmental issues they have experienced associated with climate change. This analysis uses evidence from local- and state-level policy to inform recommendations for future climate action and resilience strategies for the City of Watsonville and County of Santa Cruz. The objective is to use information from existing policy and Regeneración's survey to propose solutions that will better protect farmworkers in a changing climate as well as mitigate environmental issues caused by climate change in the Pájaro Valley.

> *"There are very hot days. It's causing a lot of health problems – you can get dehydrated easily – 2 years ago a horrible drought – it didn't rain. Plants are getting infested by bugs because of environmental reasons/changes. It's bad."* – Regeneración Survey Respondent

Current Experiences of Pájaro Valley Farmworkers

Overall, the group of individuals who identified as agricultural workers in the Pájaro Valley from Regeneración's survey[1] described their experience as follows:

- Agricultural workers have experienced increased temperatures (38%), heat waves in spring and fall (26%), and more frequent drought (29%) in regards to climate change-related experiences.
- Approximately three-quarters (74%) of the agricultural community surveyed have experienced symptoms from extreme heat at work such as fainting or dehydration.
- Two-thirds (67%) of agricultural workers surveyed said that they were concerned about pesticide exposure in their community.
- Agricultural workers would like to see increased access to local organic agriculture.[2]
- One-third of agricultural workers noted poor air quality in the community caused by smog and car exhaust.
- Approximately one-third of the agricultural population uses some type of alternative transportation as their primary mode, while two-thirds of agricultural workers use a car.
- Agricultural workers would like to see more protected bike lanes and sidewalks in their community and an increase in employer-sponsored carpools.[3]
- The agricultural community strongly favored solutions that directly mitigate climate change and reduce the community's carbon emissions.

The following experiences of the Pájaro Valley agricultural community are indicative of this region's need for climate justice as well as other underrepresented communities across the state that are also vulnerable to climate change. In the Pájaro Valley, over one-third of the agricultural population experienced extreme temperatures as well as one-quarter experienced heat waves in times of the year that are abnormal for extreme heat (Figure 1). A heat wave was not explicitly defined within the survey; however, for better context to this specific region, summer maximum temperatures of 80˚ to 90˚F were reached in the summer of 2018 within the Pájaro Valley (Westmap, n.d.). According to Cal-Adapt (2019), a heat wave for the Pájaro Valley is defined as four consecutive days and nights that do not drop below the heat threshold of 90.5˚F, the 98th percentile of this region's temperature threshold. Cal-Adapt predicts

[1] The survey collected responses from 324 participants who live and work in the Pájaro Valley. Of these, 151 respondents worked in non-agricultural jobs, 69 worked in an agricultural job, and 92 did not provide a work affiliation. Unless otherwise specified, all responses reported here are from the 69 respondents (21%) of survey respondents who specified that they work in agriculture, and all percentages are based on the sample size of 69.

[2] On a 5-point Likert Scale where 5 is strongly agree, agricultural workers rated increased access to local organic agriculture as a mean score of 4.53.

[3] On a 5-point Likert Scale where 5 is strongly agree with an action, agricultural workers rated more protected bike lanes with a mean score of 4.4 out of 5, more sidewalks as 4.5, and more employer-sponsored carpools as 4.1.

that the frequency of heat waves in the Pájaro Valley will increase for the next 20 years with peak emissions estimated around 2040 (Figure 2). In addition, climate change is anticipated to increase pesticide exposure because chemicals will become airborne more frequently and persist longer in the air with increased temperatures and dry conditions (Noyes et al., 2009). Extreme heat resulting from climate change is an increasing problem that may not be solved immediately due to its need for global mitigation strategies. However, the region of Pájaro Valley can become well-equipped to reduce its individual carbon footprint while providing its agricultural workers adaptation strategies to ensure worker safety and protections in the meantime. After all, according to the survey the community is in favor of alternative transportation such as bikes, walking, and employer-sponsored carpools (Figure 3).

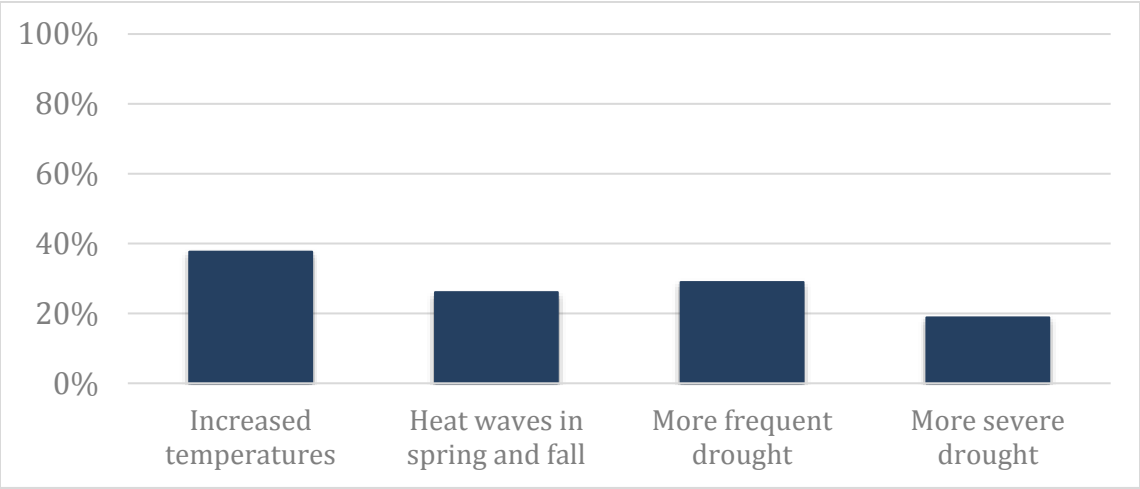

Figure 1. Environmental changes experienced by Pájaro Valley farmworkers.

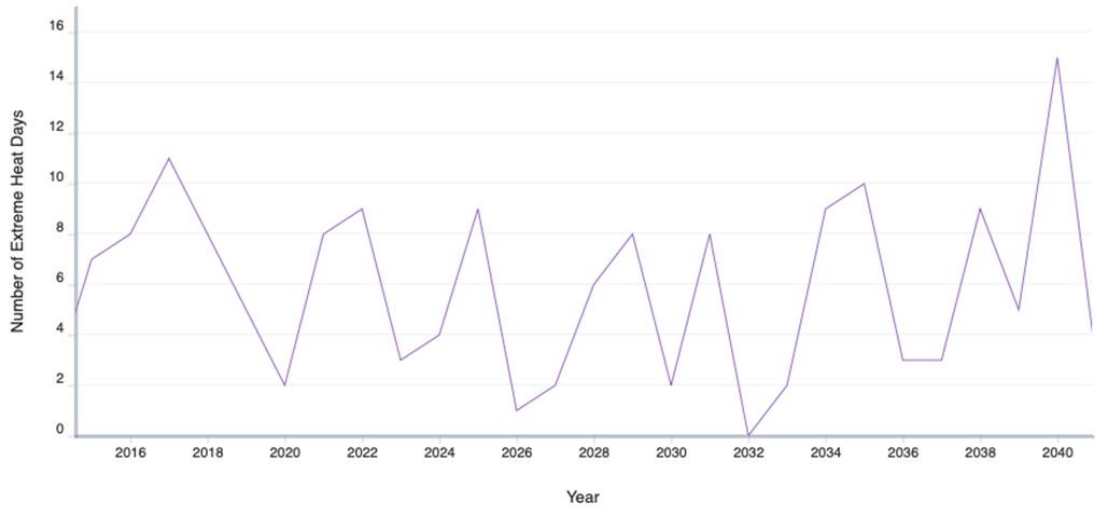

Figure 2. Cal-Adapt projection for heat waves in the Pájaro Valley (Cal-Adapt, 2019).

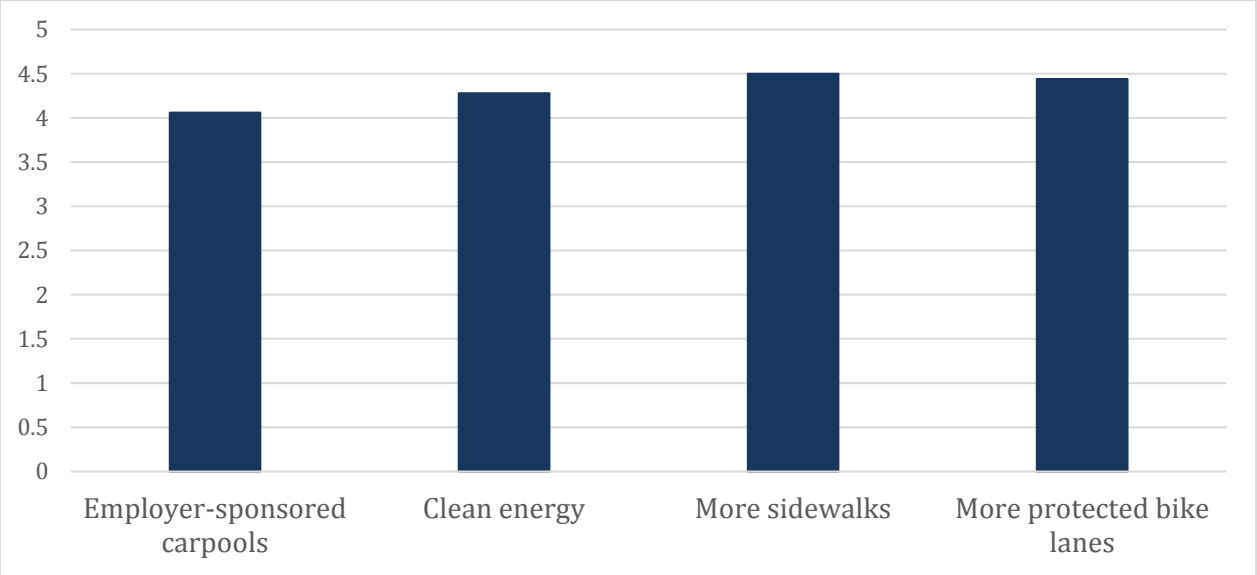

Figure 3. Climate mitigation strategies favored by the Pájaro Valley agricultural community (with 5 being the highest possible rating)

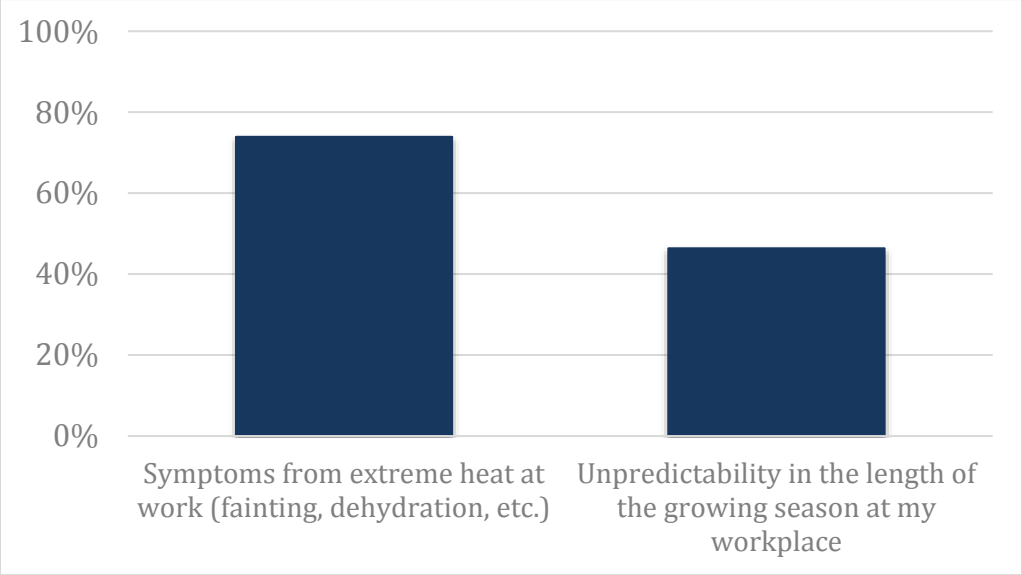

Figure 4. Physical and economic impacts identified by Pájaro Valley farmworkers

The physical effects of climate change specifically for agricultural workers include heat exhaustion, dehydration, and poor air quality (including increased pesticide exposure and increased smoke inhalation from projected increases in fire seasons throughout California). Heat exhaustion is a result of overworking in conditions of extreme or intense heat. As days of extreme heat become more

frequent with a changing climate, advocates state that the U.S. is facing a public health crisis among agricultural workers (Cabrera, 2018). According to Regeneración's survey, three-quarters of the agricultural population have experienced symptoms from extreme heat in the work fields (Figure 4). Dehydration and fainting are direct consequences of working in these conditions and put these workers' health and paychecks at risk since their wages are dependent on quantity picked and not an hourly wage. Worker wages are additionally at risk of being decreased due to unpredictability in the length of the growing seasons (Figure 4). With climate change comes the difficulty to predict what a specific year's temperatures and rainfall patterns will be, and thus agriculture can become less stable. This also places pressure on workers to work as much as possible when they can, thus further dis-incentivizing taking breaks to prevent heat illness. The California Heat Illness Prevention Study (CHIPS) at UC Davis found that a variety of factors influence the agency and ability of farmworkers to mitigate their own heat illness. In addition to the factors already listed, the study identified worker beliefs about water consumption, behavior of other workers in the field, employer relations, and the nature of work contracts (Courville, Wadsworth, & Schenker, 2016). Agricultural work is increasingly occurring at night, in part because of rising temperatures and because of existing heat illness regulations (UC Davis, 2019). This has potential health and safety effects for workers as well, including sleep-related health issues and increased vulnerability to muggings or sexual assault.

In the most recent decade, California has been in a record-long drought and two state of emergencies were declared as a measure to better conserve water supplies (California Department of Water Resources, 2015). The 2013 Southwest Climate Assessment describes that drought is expected to intensify in the dry season due to warming in terms of soil moisture retention rates and is projected to become more frequent, more intense, and longer-lasting (Garfin et al., 2013). In fact, these predictions of more severe and more frequent drought are already being experienced by the agricultural respondents from Regeneración's survey (Figure 1).

A factor that is positively correlated with longer drought periods is the potential increase for longer and more severe fire regimes. Increasing temperatures are fueling longer wildfire seasons exposing millions more people to poor air quality. According to Cal-Adapt projections, in the next 40 years wildfires will be prominent across the entire state of California, and northern regions will experience wildfires that have intensity as severe as the southern portion of the state (Figure 5). Harmful particulates can be carried hundreds of miles away from a single wildfire as demonstrated by the air quality map shown in Figure 6. This map shows the effects of the Camp Fire from November 2018, when air quality across Northern California was ranked the worst in the world. Direct physical consequences from wildfire smoke for outside workers such as agricultural labor include asthma, sore throats, chest pains, and exposure to carcinogens. Effects of inhaling particulate matter from wildfires are cumulative and thus can

be permanently damaging to human health. Some physical effects include cardiovascular harm (e.g. heart attacks, strokes, heart disease, congestive heart failure), respiratory harm (e.g. worsened asthma, inflammation), risk of developing cancer, and developmental and reproductive harm (EPA, 2009). All of these health effects are expected to increase with projections of wildfire regimes under a changing climate and will additionally worsen the vulnerability of agricultural worker health.

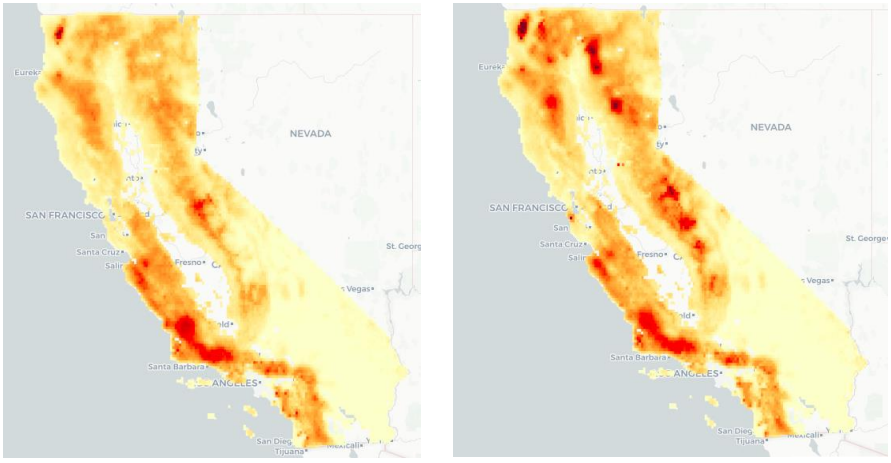

Figure 5. Cal-Adapt projections for California wildfires in 2020 (left) and 2060 (right).

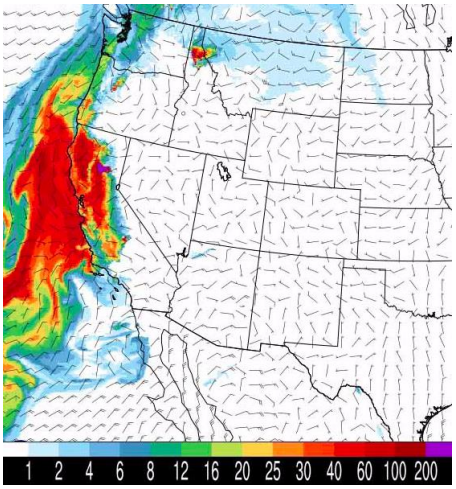

Figure 6. NOAA smoke map from California's wildfires, November 12, 2018 (HRRR-Smoke 2018-11-12, Vertically Integrated Smoke in mg/m^2, NOAA Earth System Research Laboratory).

In addition, temperature and precipitation as altered by climate change are projected to influence the distribution and biological effects of chemical toxins, including pesticides, in the environment (Noyes et al., 2009). Some pesticides may increase in volatility, thus increasing airborne exposure. In areas with increased drought, airborne toxins are expected to persist longer in the air and therefore increase risk. In areas with increased precipitation, some pesticides are expected to become greater sources of pollution in runoff, thus increasing risk of water contamination. According to Regeneración's survey, 43% of agricultural workers and 44% of other residents are already concerned about water contamination in the Pájaro Valley, and more than half (52%) of all respondents said that they currently buy water because of concerns of pesticide exposure in the water.[4] Some pesticide usage by farmers may also increase with changing climate conditions, further exacerbating potential exposure and health effects. In their review of the scientific literature, Noyes et al. (2009) surmise that these shifts collectively may increase human and wildlife exposure to pesticides. These impacts are likely to be felt directly by farmworkers as well as result in more widespread community exposure as pesticides become more readily air- and water-borne.

"We have to take better care of ourselves and protect ourselves from pesticides and smoke."

– Regeneración Survey Respondent

Current Policy Pertaining to Farmworker Protection and Climate Change

California is one of the top agricultural producing states in terms of profit value (USDA, 2008) and has one of the largest farmworker populations in the nation with over 800,000 workers (Courville et al., 2016). Estimates suggest that there are 91,433 farmworkers in the Salinas and Pájaro Valley regions, 80,715 of which work during hotter summer months (City of Salinas, 2018). Thus, the majority of workers are vulnerable to heat-related illnesses, which are projected to increase under climate change (Courville et al., 2016). Hoop houses common to production of some crops within the Pájaro Valley will also increase heat related stress, especially in summer. Some farmworkers of Pájaro Valley already report having to take short breathing breaks when working in hoop houses due to heat. With interior temperatures 10-15 degrees warmer than the ambient air, hoop house conditions can push a 75 or 80˚ degree day into extreme heat conditions for farmworkers. California has passed a heat illness prevention policy for an outdoor working heat standard that requires employees to provide adequate water, shade, and breaks to employees. The California Heat Illness Prevention Standard (GISO 3395) outlines that:

[4] For this question, 181 participants responded. Of these, 25% stated that they worked in agriculture, 24% did not give a work affiliation, and 52% said they did not work in agriculture.

1. Shade must be provided when temperatures exceed 80˚F.
2. Employees shall have access to potable drinking water.
3. The employer shall implement high-heat safety procedures when the temperature equals or exceeds 95˚F.
4. When temperatures reach or exceed 95˚F the employer shall ensure that the employees take a minimum 10-minute preventative cool-down break every 2 hours.
5. All employees shall be closely observed by a supervisor or designee during a heat wave.

It should be noted that this policy uses a high temperature of 95˚F for measuring what is unhealthy working conditions and provides no heat threshold level at which work must cease altogether. In respect to Pájaro Valley's local climate, Cal-Adapt's model defines 90.5˚F as the 98th percentile for this region's temperature threshold. Most of Pájaro Valley's climate is affected by coastal fog and rarely reaches the temperatures outlined in the California Heat Illness Prevention Standard; however, the majority of farmworkers wear long-sleeved shirts, pants, hoodies, and bandanas around their faces to protect their skin from the sun and their faces from breathing unsafe chemicals from pesticides. Layered clothing has the potential to increase the effects of increased temperatures, even if not reaching the Cal-Adapt threshold for safety standards. Additionally, workers do not want to stop for breaks since their wages are dependent on how much they pick, and therefore are more likely to experience heat illness. As a result, emergency room visits by workers are reported to be increasing from heat illness; however, field reports of heat illness remain low (Guidi, 2008). This discrepancy in data suggests that workers are experiencing increased heat illness but also perceive the consequences of taking breaks or reporting heat illness as being very high. Workers also may not report heat illness for fear of deportation (Baptiste, 2018). Therefore, farmworker heat illness is influenced by fast-paced production pressures, the piece-rate wage that workers are paid, and the immigration status of some workers, all of which create a financial disincentive that proves to be detrimental to farmworker health and safety. These effects are currently experienced within the Pájaro Valley and will increase with projected climate changes. Without revisions to the

"Neighbors here work in fields, were sent home, and a couple fainted."

"There have been people who fainted from the heat. People who don't have work in the off season lose pay."

"People can't work safely in the fields."

"If you're sick you can't make money."

– Regeneración Survey Respondents

heat threshold for the local growing and working conditions of the region, these conditions will continue to pose health and safety hazards for farmworkers.

Regarding climate change strategies, the County of Santa Cruz has adopted a local climate action strategy; agriculture is included in this report in regards to economic impacts and reduction of greenhouse gas emissions for the agricultural sector. However, there is no mention of worker protections or specific resilience planning incorporated into the strategy (County of Santa Cruz, 2019). California also has a climate strategy whose key objectives toward agriculture are to implement irrigation systems that conserve water and reduce greenhouse gas emissions. Again, there is no mention of policy pertaining to adaptation strategies for farmworkers (USDA, 2018). The City of Santa Cruz has adopted a resilience plan, but there are no specifics in regards to how they plan to support the agricultural community in regards to future climate change. The plan mentions that food production and farmworkers will be stressed further with climate change, thus making it an environmental justice issue, and acknowledges the need for adaptive measures to protect workers and crops but does not explicitly state how (City of Santa Cruz, 2017). The City of Watsonville's Climate Action Plan includes concerns with agriculture across economic and environmental sectors but similarly has no mention for adaptive measures to protect workers (City of Watsonville, 2015). Since most of the local- and state-level policies pertaining to climate action and resilience planning are geared toward natural resources, carbon emissions, and economic stability, there is a significant need for including the social component of the agriculture industry that is prevalent in the region.

Recommendations for Future Policy

In some ways, Pájaro Valley is a marginalized community that lacks a voice in today's political climate, especially in discussion of topics such as climate change that can occur far from agricultural communities. According to the World Health Organization, people who work outside, have low socioeconomic status, or are people of color are limited in their ability to prepare for and adapt to climate change (Wahowlak, 2018). Furthermore, members of marginalized communities lack the ability to exercise basic human rights to protest against the health and environmental consequences of a changing climate. They form a significant part of the community who have historically been invisible or absent from public discourse and typically not considered in policy making. In order to better protect the agricultural community of Pájaro Valley in the wake of a changing climate and meet the goals of Regeneración for climate action and justice, there is need to:

1. Create and revise local climate policy that is more informed by the community and better represents the needs of all people, specifically the agricultural community.
2. Use Regeneración's survey results to inform what mitigation strategies are most favored for the communities of Pájaro Valley.
3. Improve regulations set forth by Cal/OSHA to keep farm workers within safe heat standards that are specific to the Pájaro Valley.
4. Cover agricultural workers by expanding the National Labor Relations Act.
5. Consider compensation for workers during unsafe conditions, whether from high heat or poor air quality.
6. Conduct further research through additional surveys or focus groups to shape climate action and resilience planning.

As mentioned previously, the City of Watsonville, County of Santa Cruz, and State of California lack resilience strategies for agricultural workers adapting to future outdoor work environments under a changing climate. There is a significant need for Santa Cruz County to become more involved with this policy since counties often set governance for rural communities. The City of Santa Cruz has already plainly stated that extreme temperature and drought conditions resulting from climate change is an environmental justice issue for agricultural workers, but there is need for them to lead policy in stating how they plan to support this social group for future measures. The City of Watsonville could also lead climate justice for its agricultural community. The county and city should use data from Regeneración's survey and other local agencies to identify solutions that can address unmet needs in the Pájaro Valley community.

Regeneración's survey will also be useful in adding to or revising the current climate action plan for Santa Cruz County since the agricultural community population plainly states mitigation strategies they favor in regards to the topic. The community will be better supported through installation of wider bike paths, safe walking paths, increased public transit, and employer-sponsored carpools. All of these proposed solutions are considered alternative transportation and will further reduce the community's local carbon footprint in regards to mitigating climate change.

There is also need to revise policy for better inclusion of farmworker health issues related to climate change. Cal/OSHA has set forth the California Heat Illness Prevention Strategy but it has proven to be poorly regulated. In fact, Cal/OSHA reported in 2016 that only 62 percent of agricultural employers complied with the heat regulations (Cal/OSHA, 2016). There is a crucial need to hire or train more workers to specifically monitor all farms and ensure heat illness prevention regulations are being adhered to. Hiring more workers to monitor farms throughout the state will encourage owners to follow

regulations so that they won't be cited. This approach would provide safer working environments for farmworkers by holding farms accountable to meeting more localized heat standards (e.g. adequate shade, enforcing preventative heat-illness rest breaks, sufficient training to prevent heat illness). An additional law that needs to be more strictly regulated is the piece-rate compensation (AB 1513). This law mandates that employers pay piece-rate workers for rest breaks, therefore encouraging heat stress prevention methods and easing financial pressure to keep working despite health hazards (California Department of Industrial Relations, 2017). Because Pájaro Valley rarely reaches the temperature thresholds set forth by Cal/OSHA, there is significant need for more localized policy in defining extreme heat days and the accompanying procedures. Establishing a fund that could pay workers for days lost due to extreme heat might be one way to incentivize worker breaks and prevention of heat illness.

Another approach would be to expand the National Labor Relations Act and provide coverage for all agricultural workers. The National Labor Relations Act has the potential to become more equitable by expanding coverage to all workers, regardless of citizenship or immigration status. Evidence from this survey and other sources show workers are falling ill and even dying on the job due to heat exhaustion (Cabrera, 2018). There is potential to decrease the number of those whose health is negatively impacted by working in extreme heat conditions by providing compensation for worker health and well-being through paid breaks or time off. There is need to support coverage for the agricultural industry since they have proven to be the most vulnerable in unhealthy working conditions brought on by climate change and contribute significantly to our economy and well-being by picking the food that supports our nation. This is both an environmental justice and a human rights issue because farmworkers are paying the price for climate change with their health and/or their wallets, yet they have done little to contribute to the emissions that are the source of this problem.

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The mission of the ***Environmental Studies Program*** *at California State University Monterey Bay* is to develop students and communities with the knowledge, skills, and compassion to promote social and environmental justice and sustainable communities.

Regeneración was founded in early 2016 through a series of conversations with community leaders. These conversations illuminated the need for a climate justice organization in Watsonville; Regeneración has emerged to address this need. Regeneración was founded on the principle that climate change is a social justice issue with local impacts and must be engaged with on a local level in order to build resilient communities.

https://www.regenerationpajarovalley.org/

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