KERN COUNTY

COMBO DISASTER

CASE STUDY

ENVIRONMENTAL

INJUSTICE

SUMMER 2021

GROUP NO. 1

AUTHORS

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ABOUT

This case study report was developed by students at the University of California Irvine for the undergraduate class, "Environmental Injustice," taught by Kim Fortun, Tim Schütz, Kaitlyn Rabach, Prerna Srigyan and Maggie Woodruff for the Department of Anthropology, Fall 2020. The University of California Irvine is on the ancestral homelands of the Tongva and Acjachemen nations.

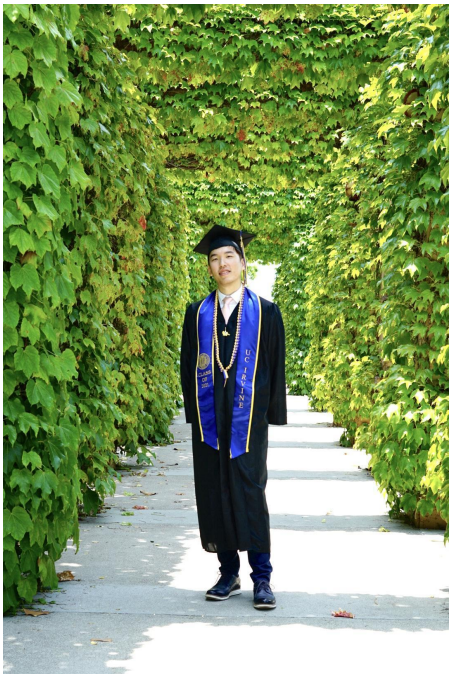
COVER PHOTO

Cover image description and source

The image was taken on July 12, 2021 and it demonstrates how the wildfires in Mariposa County spread to Kern County and caused smoke impacts in the Valley portion of the County. The air district warned residents to stay indoors to reduce their exposure to particulate matter emissions from the smoke, as they can trigger asthma attacks, aggravate chronic bronchitis and increase the risk of heart attack and stroke (Luiz, July 12, 2021)

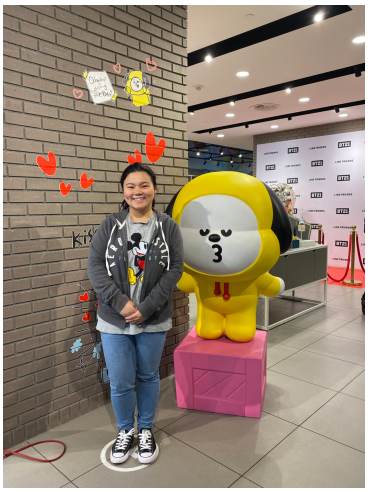
Source: https://www.kget.com/news/local-news/valley-air-district-issues-health-caution-due-to-smoke-from-river-fire/ (Screenshot by Seyedeh Saina Saifzadeh, July 14, 2021)

BIOGRAPHICAL STATEMENT	PHOTO
Hunter Walsh is an incoming freshman to UCI majoring in Mechanical Engineering. He hopes to be able to take what he learns from this class to help people in the products he designs in engineering. He also hopes to be able to design car engines that are more efficient and pollute less.	

Cyrus Lo is a senior Computer Science Student at University of California, Irvine. He was born in Hong Kong. He likes solving problems. For more information about him go to: https://www.cyruslo.co	
Shannen Duke is a second year business administration major at the University of California, Irvine. She has grown an interest in helping the environment after experiencing plastic pollution in the ocean where she lives and wanting to help solve this issue and many more. She is very excited to learn about ways she can help improve our environment and solve environmental injustice issues wherever she can.	

Mona Gerami is a second year Psychological Science major at University of California, Irvine. She has taken two courses in climate change and air pollution her freshman year which began her interest in the environment. She values helping others' mental health as well as their physical health. She hopes to do her part in creating a healthier environment for future generations.	
Colin Donahue is a third year history major at University of California, Irvine. He has been interested in environmental injustice since taking environmental science in high school. Since he is a history major he is concerned about the future history and that history is happening right now.	
Gautam Chaudhri is a second year biological sciences major at the University of California, Irvine. He first took an interest in environmental activism when he volunteered in a cleanup with his friends at the San Joaquin Marsh & Wildlife Sanctuary in high school. Since then, his interest has grown and he hopes to use what he has learned so far to fight for the	

environment and make the world a better place for future generations.	
Seyedeh Saina Saifzadeh is a fourth year Biological Sciences major at the University of California, Irvine. She has been a part of the "green team" for over three years , working with other student's to make their local community a more sustainable place. She has done over 500 hours of volunteer work cleaning beaches.	
Negin Pourgholam is a first year Biology student at the University of California, Irvine. This is her first anthropology course, and with her background in biology, she hopes to use her learnings in this class to contribute to her development as a well rounded, aware citizen in hopes of making decisions better for the world around her.	
Kasumi Kiriakidis is a second year mathematics major and ICS minor at the University of California, Irvine. She has been	

involved in some environmental activism events throughout high school, and has served a leadership position in an environmental club. She is very enthusiastic about environmental issues, especially topics on air pollution and plastic waste.	
Kelly Guan is a third year biological sciences major at the University of California, Irvine. She has been interested in environmental injustice and how to support environmental groups since high school. She is interested in learning about how the government and green organizations all over the world have created plans and programs in the interest of the current and future generations to create a healthier and greener planet.	

Will Welker is an incoming freshman to University of California, Irvine. He plans to major in Environmental Science and Policy and minor in Economics. He is very interested in environmental science and the economic implications of climate change.	
Vivian Dinh is a fourth year biological sciences major at University of California, Irvine. She has taken interest in learning more about clean energy and ways to better help/improve the environment.	

TABLE OF CONTENTS

INTRODUCTION

This case study report focuses on a combination of disasters that are caused by climate change. At the same time, the paper demonstrates how rapid climate change results in the constant exposure of community members to environmental hazards.

Climate change is not only linked to an increase in the incidence of extreme weather conditions such as hurricanes and catastrophic flooding, and dams breaking , but it is also linked to less dramatic weather conditions such as change in water availability, agriculture productivity, and the outbreak of diseases. Today, people residing in Kern County experience the combination of these climate change conditions at a faster rate due to the constant oil drilling that is permitted in the setting.

Kern county is located in the southern Central Valley and its population is made up of mainly minority groups that are well below the poverty line. This case study not only highlights that the environmental hazards present in Kern county constantly contribute to the climate crisis, but it also highlights that the Climate crisis impacts the population of the county a lot more instantly compared to the rest of the country because of lack of resources and the poverty level of its population. At the same time the children born in Kern county face a countless number of dangers everyday due to the environmental hazards caused by the present oil industries. As a result, if nothing is done in the near future, health defects might become an undeniable reality present in the county.

Ultimately , the uncontrollable change in the climate results in “rising temperatures that fuel environmental degradation, natural disasters, weather extremes, food and water insecurity, economic disruption, conflict, and terrorism” (United Nations). Although a large percentage of the countys’ residents are calling the county to ‘just transition’ away from oil, politicians push back and refuse to entertain these calls (Cox, May 26, 2021). This

study examines the data from research that has been conducted throughout the years to demonstrate the reasoning behind anti drilling movements that constantly occur in the county. At the same time, the climate change crisis weighs heavily on specific linguistically isolated communities and communities that consist of people of color more so than other people. Hence, most movement leaders are members of such minority groups.

ENVIRONMENTAL INJUSTICE CASE STUDY FRAMEWORK

1. What is the setting of this case? What are its assets?
2. What environmental health threats (from explosions, everyday pollution, climate change, etc) are there in this setting?
3. What intersecting factors -- social, cultural, political, technological, ecological -- contribute to environmental health vulnerability and injustice in this setting?
4. Who are stakeholders, what are their characteristics, and what are their perceptions of the problems?
5. What have different stakeholder groups done (or not done) in response to the problems in this case?
6. How have environmental problems in this setting been reported by media, environmental groups, companies and government agencies?

7. What local actions would reduce environmental vulnerability and injustice in this setting?

8. What extra-local actions (at state, national or international levels) would reduce environmental vulnerability and injustice in this setting and similar settings?

9. What kinds of data and research would be useful in efforts to characterize and address environmental threats in this setting and similar settings?

10. What, in your view, is ethically wrong or unjust in this case?

FIGURE 1: This is the analytic framework that guided research for this case study.

FIGURE 2: Kern County is well known for its oil and gas operations. Bakersfield, the largest city in Kern County, is named one of the most polluted places in the United States. If the climate change issue continues, some fruit like pistachios, grapes, oranges, and carrots will be more differencult to grow due to the extreme weather (COX).
https://www.mapsofworld.com/usa/states/california/california-county-map.html
https://en.wikipedia.org/wiki/Kern_County,_California#/media/File:Map_of_California_highlighting_Kern_County.svg
https://www.bakersfield.com/news/climate-change-report-forecasts-hard-times-for-kern-ag/article_a9b0f9e2-ddb3-11ea-b024-bbc9636fdb74.html
(Screenshot by Cyrus Lo, July 12, 2021)

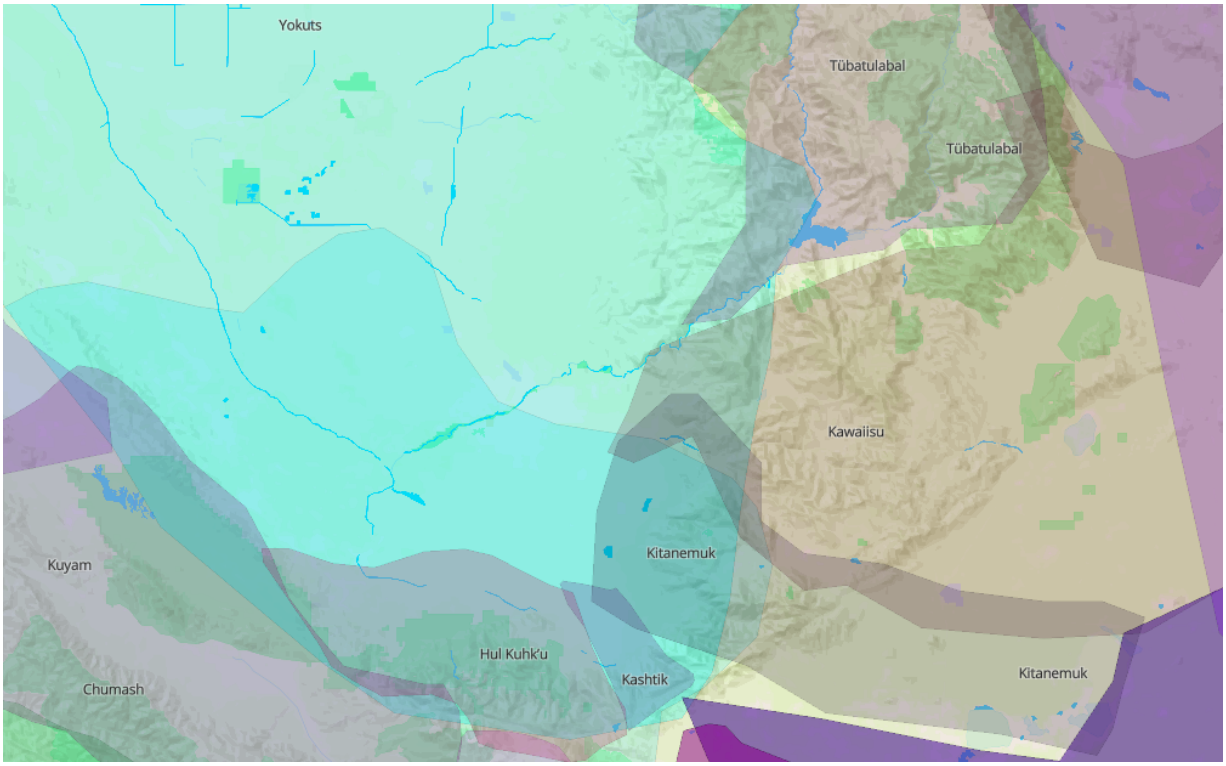


FIGURE 3: Kern county is located "in the southern Central Valley " on the native lands Kitanemuk, Kashtik, and Hul Kuhk'u (UC Cooperative Extension). The county spans the southern end of the Central Valley and covers 8161.42 square miles. Kern County is an ancestral homeland to the TejonIndian Tribe of California which is federally recognized as the tribe of Kitanemuk, Yokuts, and Chumash indigenous people of California (Tejon Indian Tribe).

https://www.tejonindiantribe.com/who-we-are-today/
http://cekern.ucanr.edu/?showSiteInfo=true

(Screenshot by Seyedeh Saina Saifzadeh on July 14, 2021)

1. COMMUNITY ASSETS & SETTING

Kern County is Drying

Cyrus Lo

Kern County is famous for their natural resources - oil and gas. There are around 100,000 wells located in Kern County ("Wells In Kern County"). According to the World Population Review, 21% of the population in Kern County is in poverty. Among them, 35.7% of them are Islander, 35.11% of them are Black, 25.36% are Native, and only 14.19% are White. Also, most people are poorly educated. Most of the population only achieved 9th grade ("Kern County, California Population 2021"). In 2016, the World Health Organisation (WHO) had identified San Joaquin Valley as having the country's worst air pollution ("Environmental Justice Education",2020). At the same time, most fruits, nuts, and vegetables that are provided in the US are from the San Joaquin Valley, Kern (Rory, 2016). Therefore, most of the fruits we are eating everyday are polluted by those wells. The wells are not just damaging people's health but also causing climate change. According to Elicabeth Perez, the Community Organizer in Kern County for the Central California Environmental Justice Network, oil and gas drilling is a significant contributor to climate change. Also the process of oil and gas drilling will emit methane which is known as the climate change accelerator (Williams, 2021). A recent report shows that the eastern half of Kern County is classified as Severe Drought. This is because of global warming caused by climate change (Rush,2021).

Global warming is a rising issue over the past few decades that puts everyone's life at risk.

We can feel the impact by noticing that the temperature in summer keeps rising every year. The Paso Robles airport in central California has reached a record of 114℉ which tied their record in 1961. Also, the Death Valley was expected to reach 130℉ which is the record of the hottest temperature on earth (PINHO, 2021). The heat wave hit Kern County as badly as other counties. According to KGET.com, a local news station in Kern County, the Kern County almost reached their highest temperature in the history as of June 17, 2021 (Small. 2021). They also stated that the temperature will go as high as 110℉. Climate change affects the crop in Kern County. Some crops like almonds will benefit, but for some crops like pistachios, grapes, oranges and carrots will be more difficult to grow (Cox, 2020). Figure 5 below is showing the pistachio harvest in 2019 at Quailwood Farms in Buttonwillow, Kern. The high temperature caused by climate change makes the pistachio getting harder to grow. Although Biden's government announced that the U.S. is going back to join the Paris agreement to fight climate change which will suspend oil and gas permitting on federal lands and waters which benefit the health of the residents in Kern County, it will damage the Kern economy since Kern's biggest income is from is from oil and gas (Price, 2021).

Kern County also has different assets that help to ease the problem of climate change.

First, they have Kern Green which is an environmental organization in Kern County. Kern Green works with the residents, schools, businesses and the community to protect the environment in Kern County through education and awareness. They email a monthly newsletter to over 3000 Kern County residents to educate the local residents about environmental health and hold some community recycle drives ("About Us Kern Green").

Also, they have The Kern Climate Change Task Force which is a local government program supporting climate change mitigation. They were formed in 2009 in order to assist the Kern Council of Governments to achieve the Senate Bill SB375 which the goal is to reduce the greenhouse gas emission from cars and light trucks to land use and transportation policy ("Climate Change").

Then, they have the Kern County Climate Change and Health Profile Report which is a local government program supporting climate change adaptation. According to resilientCA, the report is “to help Kern County prepare for the health impacts related to climate change through adaptation planning. The report presents projections for county and regional climate impacts, the climate-related health risks, and local populations that could be vulnerable to climate effects.” (“Climate Change and Health Profile Report Kern County”,2021).

Moreover, they have the Sierra Club – Kern-Kaweah Chapter. They are a non-government climate action organization in Kern County. They educate the residents in Kern County to protect and recover the natural environment. They also promote the practice that we all must use the earth's resources responsibly (“Sierra Club – Kern-Kaweah”).

However, according to the Schools for Climate Action, a campaign that empowers the schools to speak up for climate action, no school in Kern County has joined their campaign (“School Boards).

Luckily, there are 14 cooling centers in Kern County. They are operating from 1:00pm to 8:00pm everyday. However, due to the COVID-19, all the visitors are required to wear a face covering and required to keep social distance with each other(“Cooling Centers”) .

FIGURE 4: This figure shows Kern County's most important natural resource, their oil fields which feed the economy and cause many environmental problems. Kern is the top producing county of oil in California.
https://www.kvpr.org/post/millions-gallons-oily-water-have-surfaced-kern-county-oil-field-and-more-keeps-coming
(Screenshot by Colin Donahue, July 14, 2021)

FIGURE 5: This is a pistachio harvest in 2019 at Quailwood Farms in Buttonwillow, Kern. According to a report from the California Department of Food and Agriculture, if the climate change issue continues, the pistachio will be harder to grow, due to the high temperature caused by the climate change.
https://www.bakersfield.com/news/climate-change-report-forecasts-hard-times-for-kern-ag/article_a9b0f9e2-ddb3-11ea-b024-bbc9636fdb74.html
(Screenshot by Cyrus Lo, July 12, 2021)

FIGURE 6: This figure shows Kern County Supervisor Zack Scrivner who slammed Gavin Newsom for an executive order that would move California away from oil and gas production. Sale of internal combustion vehicles would be outlawed within 15 years. Scrivner is upset about the thousands of jobs that the oil industry supplies in Kern and what the government will do about them.
https://www.bakersfield.com/news/kern-officials-slam-governors-climate-order/article_62828000-fdf6-11ea-a7e2-e79bbf9a0b39.html
(Screenshot by Colin Donahue, July 14, 2021)

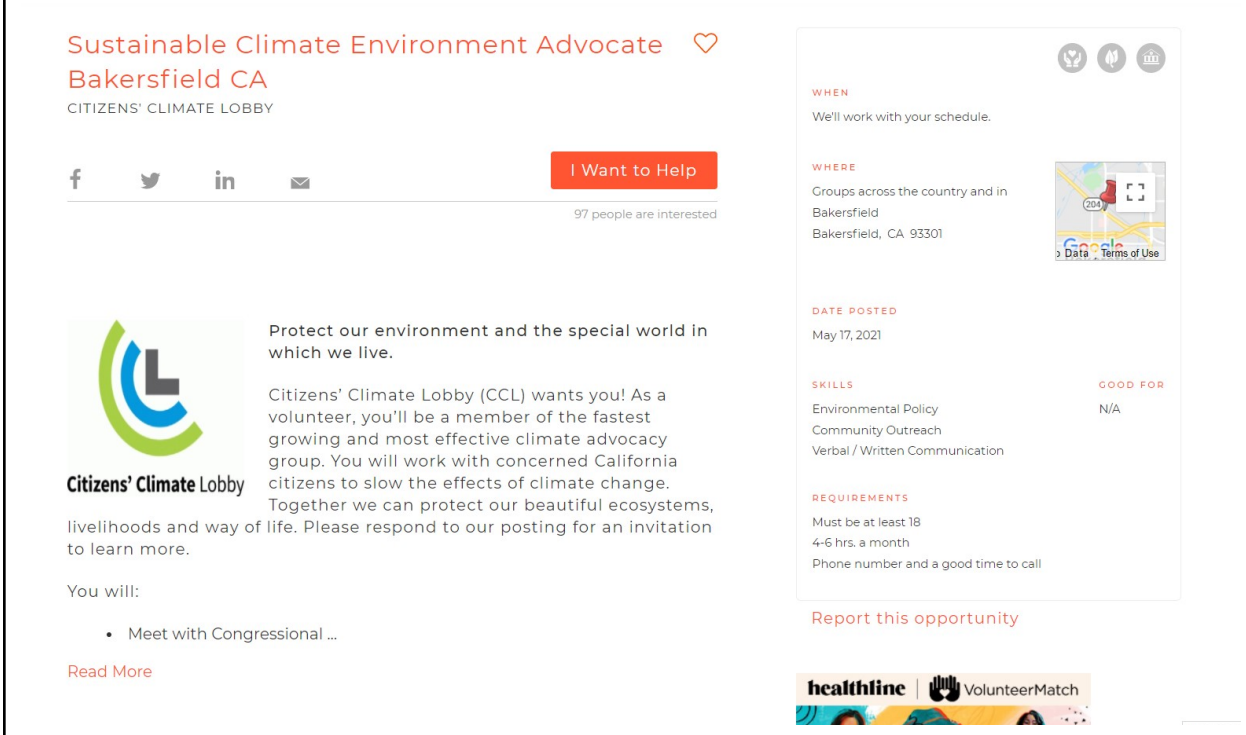


FIGURE 7: Citizens' Climate Lobby (CCL) is a climate activism group in Bakersfield that is a "non-profit, non-partisan, grassroots advocacy organization focused on national policies to address climate change". They keep their membersupdated with plenty of opportunities to get involved and fight for climate change in the Bakersfield area. Volunteers for the CCL are put to work, with anywhere from 4-6 hours a month of dedicated volunteer work for climate activism, from meeting with congressional leaders, to attending meetings, to working on different forms of social media. https://www.volunteermatch.org/search/opp2233827.jsp (Screenshot by Shannen Duke, July 14, 2021).

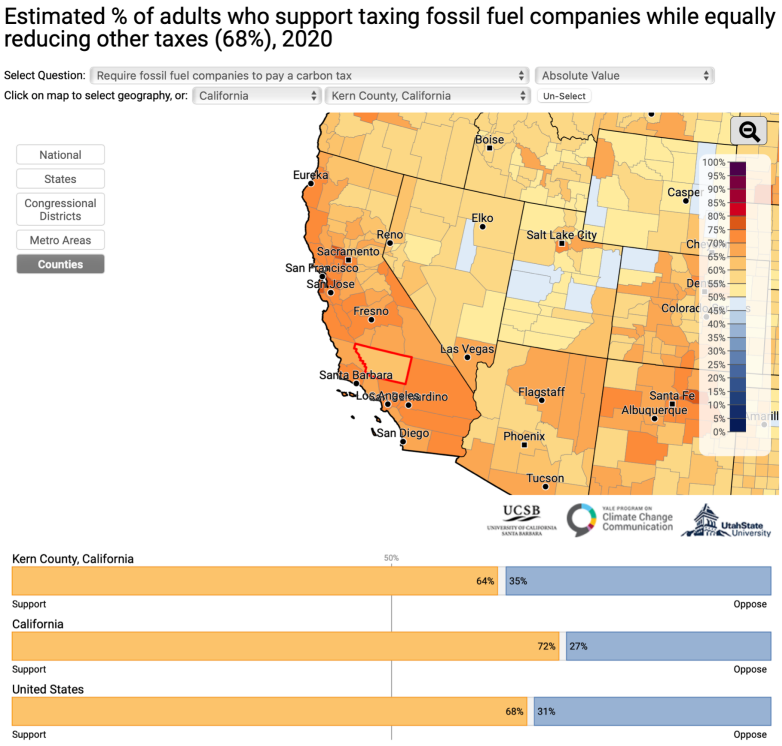


FIGURE 8: This Yale Climate opinion map shows that only 64% of adults support taxing fossil fuel companies while equally reducing other taxes, 4% below the national average and 8% below California's average. This shows that a higher % of people in Kern county support fossil fuel companies than other counties around the state and country. (Screenshot by Hunter Walsh, July 13, 2021)

2. FAST DISASTER & OTHER ENVIRONMENTAL THREATS

Potential climate hazards that face Kern County.

Gautam Chaudhri

Climate change has caused a shift in weather patterns all across the globe. Average temperatures are rising in both the summer and winter, weather and storms are becoming more extreme, and availability of clean water is becoming more scarce. Communities across the globe are dealing with some or maybe all of these problems to various degrees. As it stands today, Kern County is currently dealing with all of these problems and more. The three most dangerous threats to Kern County are extreme heat and temperature

rises, wildfires, and drought and water scarcity. Flooding due to extreme weather is another threat to the county but only poses a medium risk. Lastly, the threat of flooding due to sea level rise remains a low risk for the foreseeable future in Kern County.

The first major hazard that Kern County faces is extreme heat and a rise in temperatures. If global warming trends continue as they are, Kern faces an average increase of 3°F to 4°F increase in average temperatures in the winter and a 5°F to 6°F increase in average temperatures in the summer by the year 2100 (CDPH 2017). These temperature increases pose major health risks to the residents. When manifested into heat waves, they will increase hospitalizations due to heat -related illnesses such as mild heat stress and fatal heat strokes. Increase in temperatures also intensifies photochemical reactions that produce smog and ground level ozone. This will make air quality worse and increase respiratory illnesses (CDPH 2017). Kern County preparedness for extreme heat is fairly low. There is very low civic engagement among the residents and many of them also have high amounts of debt, making them financially unfit to prepare for future heat waves.

The next major hazard that Kern County faces is drought and water scarcity. Drought conditions have been ongoing since early 2020 and have only persisted, worsened, and expanded dramatically. More than 50% of western drought conditions are categorized as extreme or exceptional drought. NOAA predicts that these conditions will only continue to persist and spread throughout the southwest, with some sources claiming there is risk of the current widespread drought becoming permanent (Cohen-Shields 2021). The current drought has dried up some water sources and the groundwater that is available in the region has become contaminated with pollutants. Water-supply wells in Kern County "have oil-industry pollutants according to a new report released Thursday by the State Water Resources Control Board. According to the report, elevated levels of arsenic, barium, and boron were found… the California Water Board says pollution was 'expected' due to how close water wells are to oil and gas activities" (Bakersfield Now 2019). This incident has caused people that are affected by this to buy bottled water from their nearest grocery store multiple times a week. To make matters worse, the people that are

forced to do this are very close to the poverty line or even below it, meaning they are not financially capable of buying bottled water but are forced to anyway. The biggest health impact from droughts is a sharp decline in air quality due to wildfires, which goes into more depth in the following paragraph.

The combination of a rise in temperatures and a drought which creates more dry climates results in more frequent wildfires, the third major threat facing Kern County. With the current conditions in the region and projected future conditions, “the eastern edge of [Kern County] is projected to experience an increase in wildfire risk of 4 to 6 times current conditions” (CDPH 2017). Wildfires impact public health by sharply declining the air quality in surrounding areas. Wildfires are a major source of smoke, soot, and other air pollutants. These pollutants are responsible for increasing respiratory problems in residents and may even be life-threatening to people with existing health problems, such as asthma. In terms of preparation, The Kern County Fire Department has been given a large increase in their budget to combat wildfires. As of June 29, 2021, the department has received more than $2.6 million which will help them expand their resources and better fight future fires (Vartan 2021). This budget increase will make the region more capable to combat wildfires even though they pose a major risk.

The three hazards listed above pose the greatest risk to Kern County. However, there are two more hazards which only pose a low risk. The first of these hazards is flooding due to extreme weather. Flooding due to these reasons poses a low risk because the region’s exposure to a source that causes flooding is very low. The region is not located in a high risk flood zone and the sensitivity, which takes into account infrastructure and various public factors, is also fairly low (ND Gain). The last hazard is flooding due to sea level rise. This hazard poses the lowest risk to Kern County. Current projections show that Kern County is not vulnerable to permanent flooding due to sea level rise until at least the year 2040. Therefore, flooding due to this reason is not a major concern. The largest health impact from flooding is loss of life and destruction of property. Floods can cause people to drown as water can move quickly. Flood water is also contaminated with trash and other

dangerous contaminants which can spread disease and cause illnesses in humans. However, as stated above, flooding poses a very low risk so these impacts are not a major concern.

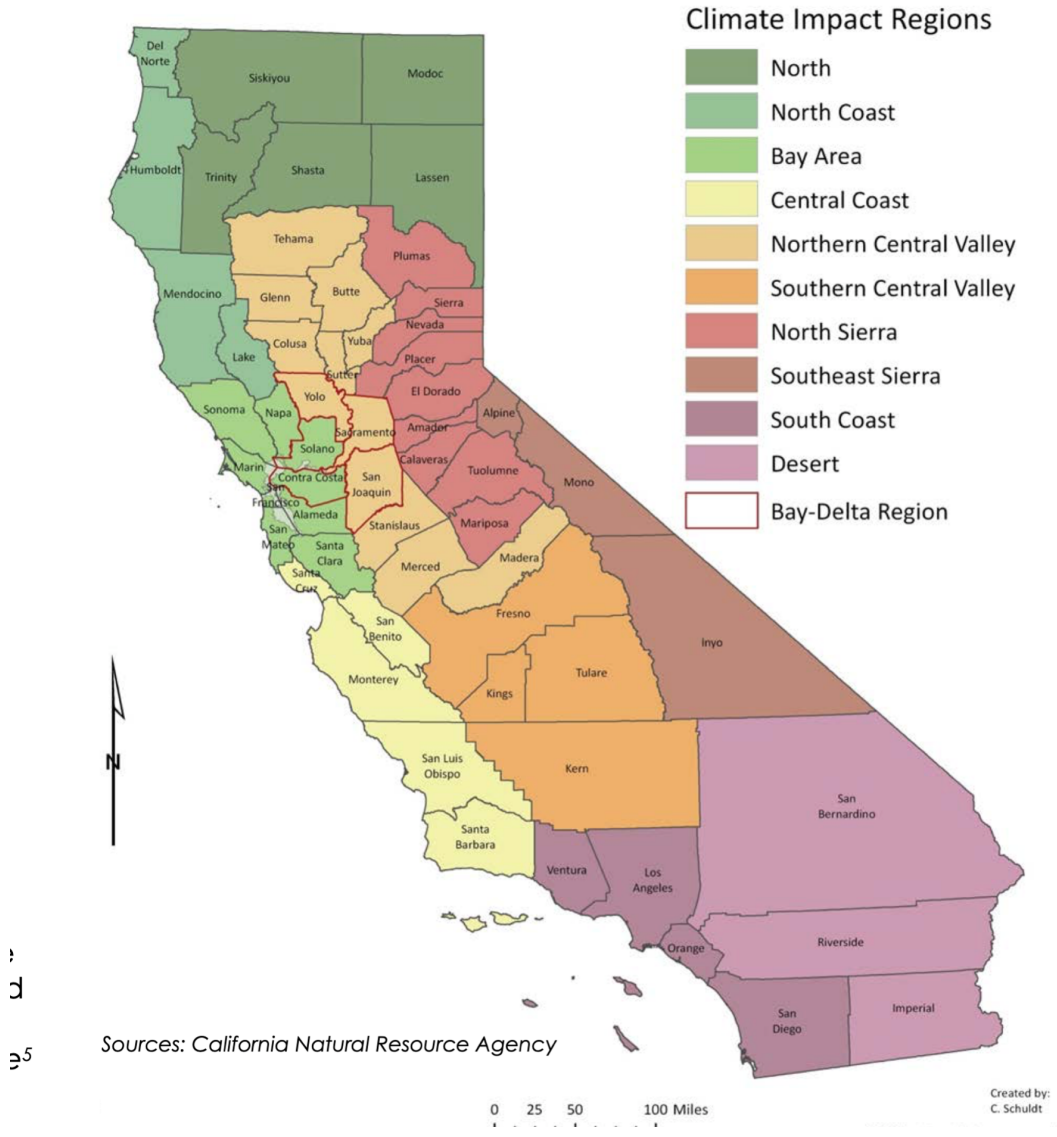
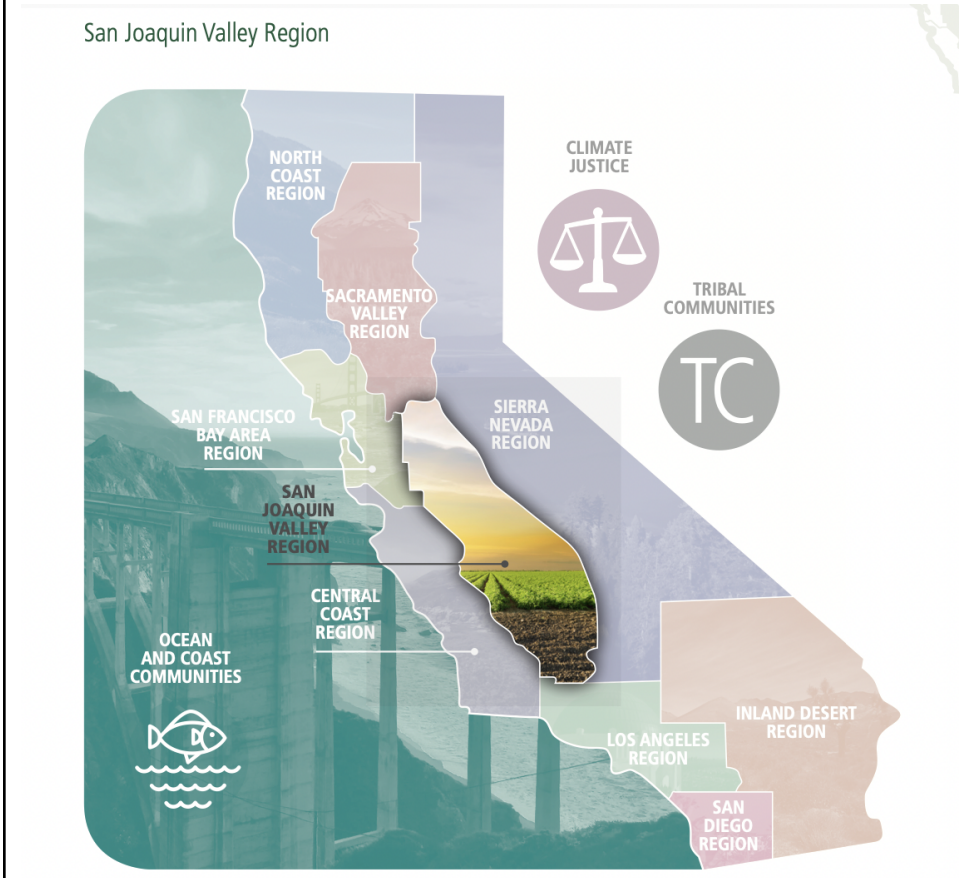


FIGURE 9: This map shows different regions of California. Kern County is located in the Southern Central Valley ,which means they can expect a temperature increase, less precipitation, more heatwaves, and a higher wildfire risk in coming years due to climate

change. (Screenshot by Hunter Walsh, July 13th, 2021)



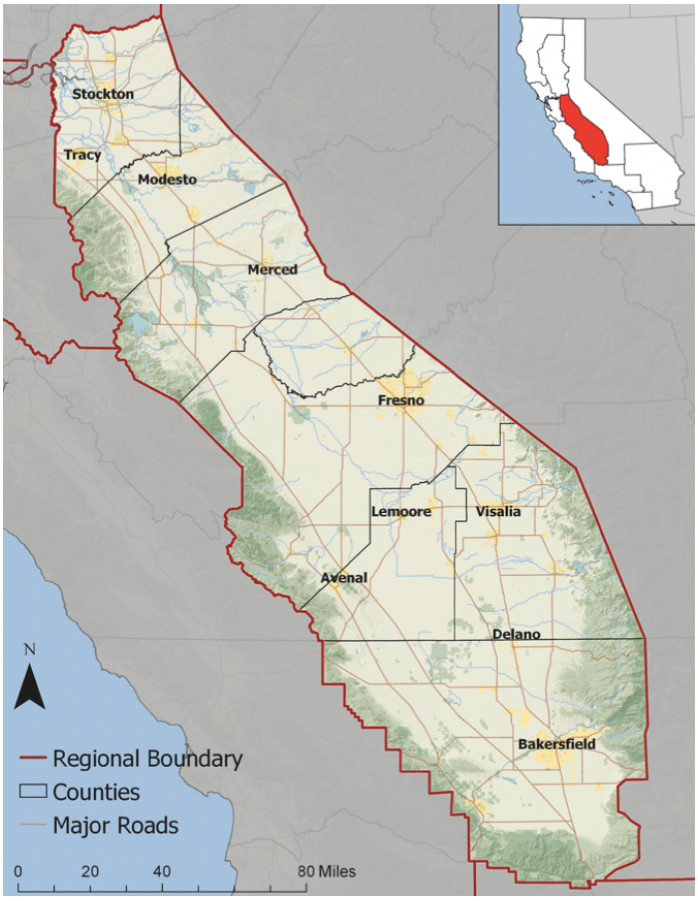


FIGURE 10: The maps in this figure show how different regions of California were split up for California's Fourth Climate Change Assessment. The region focused on above is the San Joaquin Valley Region; this includes San Joaquin, Stanislaus, Merced, Kings, Tulare County, and part of Madera, Fresno, and Kern County.
https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-003_SanJoaquinValley_Preview_ADA.pdf
(Screenshot by Will Welker, July 14, 2021)

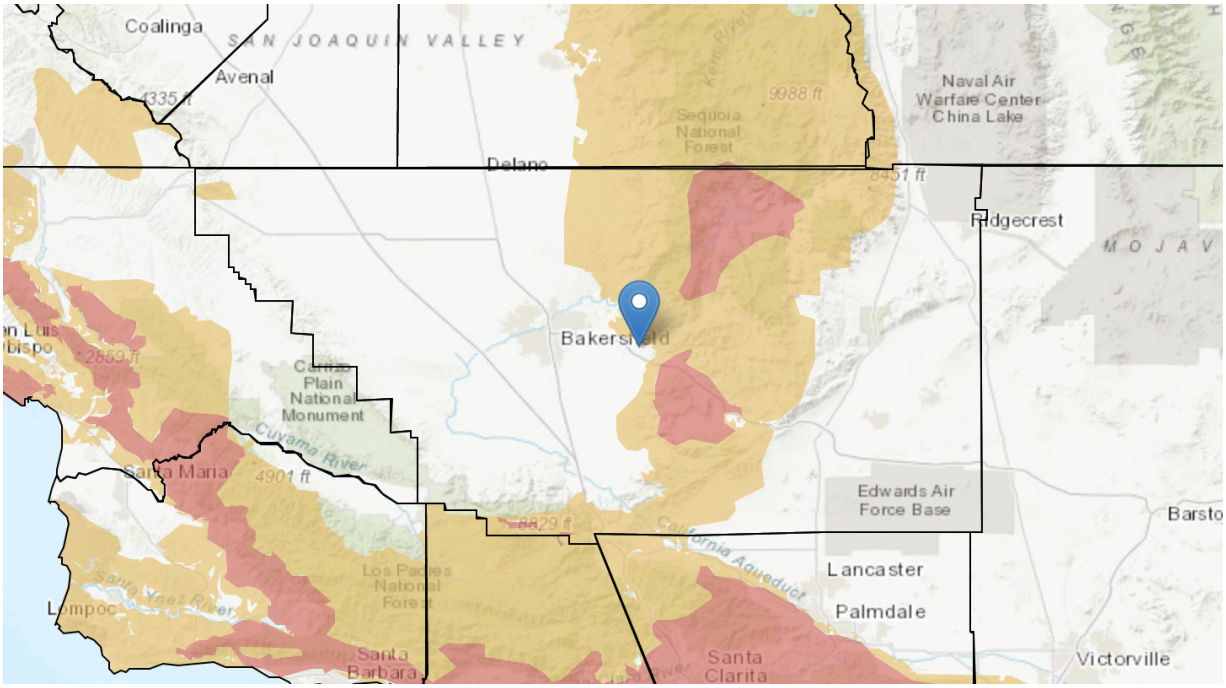


FIGURE 11: This map generated by the California Public Utilities Commissions (CPUC) Fire Map depicts Kern County and the areas of fire threats. Areas shaded in red are extreme threat areas and areas shaded in yellow are elevated threat areas. On June 27, 2021 there was a Shell Fire that broke in Kern County which spanned almost 2000 acres (Franco, 2021).

https://ia.cpuc.ca.gov/firemap/

(Screenshot by Vivian Dinh, July 13, 2021)

3. COMPOUND VULNERABILITIES

Money or Health?

Mona Gerami

Kern County has many intersecting factors which contribute to environmental injustice, specifically climate change. Below are five figures which illustrate a few intersecting injustices. The poverty levels in Kern County are greater than average which puts residents in a vulnerable position when it comes to environmental disparities. Being impoverished could lead to trouble receiving healthcare. Another study showed that Kern County has a higher than normal percentage of children living in crowded households, resulting from poverty. The average percentage in California is 27.9 and the percentage in Kern is 28.5. This can lead children to have poor health outcomes and less opportunity academically. This puts Kern children at greater vulnerability when facing climate change. In figure sixteen about climate health risks, over half of the households in Kern County face food insecurities and low income. Over 80 percent of households have air conditioning which worsens climate change by heating the area surrounding the household. Heat risk is another major factor which Kern stands at medium risk. The high population and crowded households contribute to this. Since California has many wildfires that increase carbon emissions, heat risk is even higher. California is prone to wildfires mainly in the valley which spread across to different mountains. These fires release toxic

chemicals like carbon into the air which contributes to air pollution. This is crucial in Kern County because of the oil refineries which would likely explode if in contact with a wildfire. Figure sixteen goes more in-depth on the wildfire risk. Bakersfield has violated the Clean Air Act by transporting Bakken Crude on trains. These violations could lead to explosions that would harm and possibly kill many residents in Kern, specifically Bakersfield. The pollution from the train itself contributes to Kern having some of the worst air pollution in California. In fact, Oil refineries in Bakersfield contribute to bad ozone and high PM concentration. The city breaking the Clean Air Act regulations puts residents at risk for bad air quality and possible accidents or explosions. Residents in close vicinity will face health disparities due to abnormally low AQI. Another major issue for the environment is fracking and gas wells that negatively affect Kern County residents through air pollution and water contamination. The water scarcity is further explained in figure fourteen. Many of the water wells are undrinkable or contaminated. Residents are at a severe disadvantage because gas wells and oil refineries are economically necessary for their county but environmentally taxing. Overall, Kern County faces economic and social intersecting injustices.

"Breathless in Bakersfield: Is the Worst Air Pollution in the US About to Get Worse?" The Guardian. Guardian News and Media, February 14, 2017. https://www.theguardian.com/cities/2017/feb/14/bakersfield-california-bad-air-pollution-us.

Natural Resources Defense Council. "Fracking Threatens Health of Kern County Communities Already Overburdened with Pollution." NRDC Fact Sheet. NRDC, September 2014. www.nrdc.org/policy.

COUNTY POVERTY LEVELS

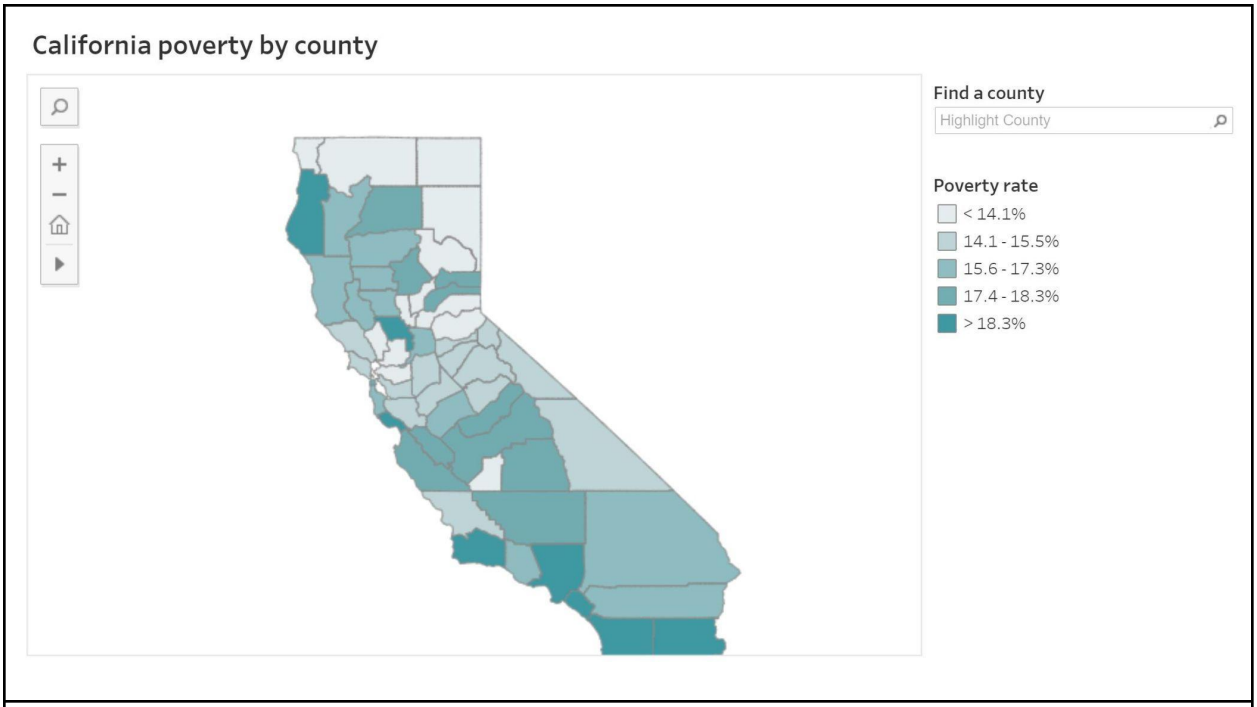


FIGURE 12: The poverty rate in Kern County is 17.6%, which is greater than the national average of 13.1%. The largest demographic living in poverty are females aged 25-34, followed by females aged 6-11 and then males aged 6-11.

California Poverty by County and Legislative District - Public Policy Institute of California (ppic.org)

(Screenshot by Gautam Chaudhri, July 14, 2021)

HEAT RISK

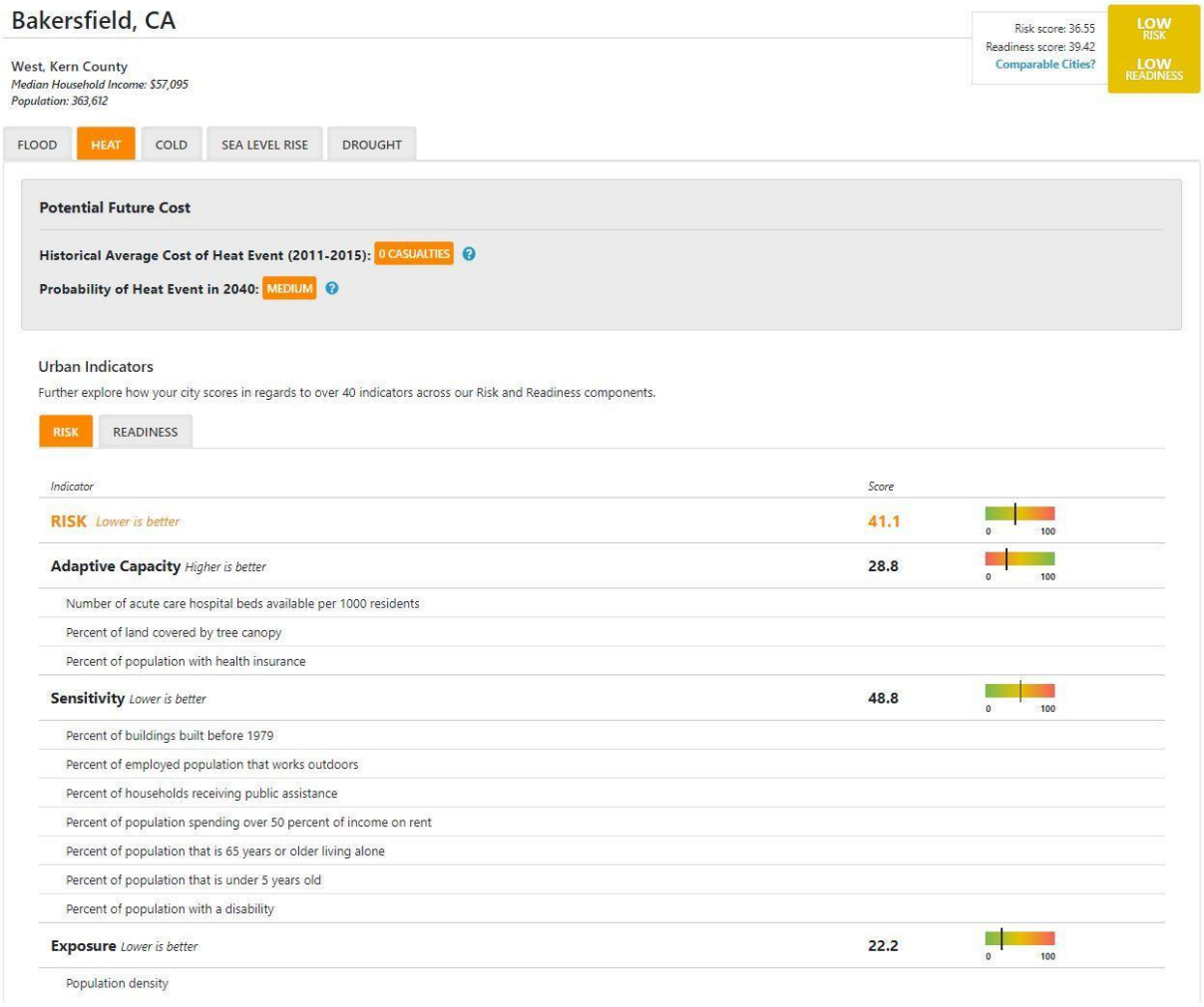


FIGURE 13: Kern County has about a medium risk in regards to heat damage caused by Climate Change by 2040. The sensitivity of infrasturctrue and preparedness of the population is about average and could use some improvement to minimize damage caused by extreme heat.

ND Gain - UAA

(Screenshot by Gautam Chaudhri, July 14, 2021)

WATER SCARCITY

FIGURE 14: Five of the seven wells in Kern County are contaminated with 123-trichloropropane (TCP) which cause cancer. One of the wells is completely undrinkable. The county has a population of about 20,000 people and has a high latino population. The community works mainly in agriculture.
https://calmatters.org/california-divide/2021/06/california-water-drought-shortage-crisis-well-failure-teviston/
(screenshot by Mona Gerami July 14, 2021)

TREE COVER

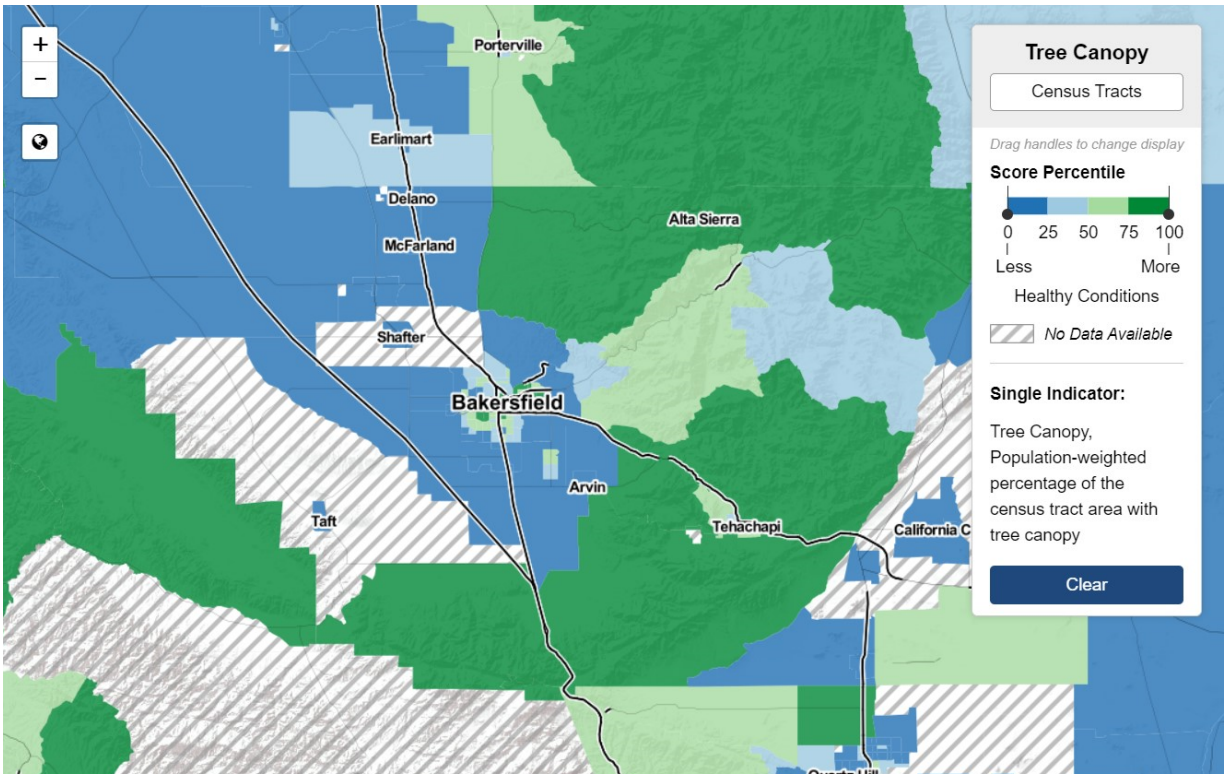


FIGURE 15: In the following map provided by the California Health Places Index, Bakersfield, located in Kern County, displays an uneven distribution of tree canopy, with some regions of the county in the lowest percentile for census tracts in California. It is important to have ample tree cover because "tree canopies are particularly good at reducing health stress associated with urban heat islands" (Cusick 2021). With little tree cover in Bakersfield, residents are more susceptible to heat stress and pollution. https://www.scientificamerican.com/article/trees-are-missing-in-low-income-neighborhoods/

(Screenshot by Shannen Duke, July 14, 2021).

CLIMATE HEALTH RISKS

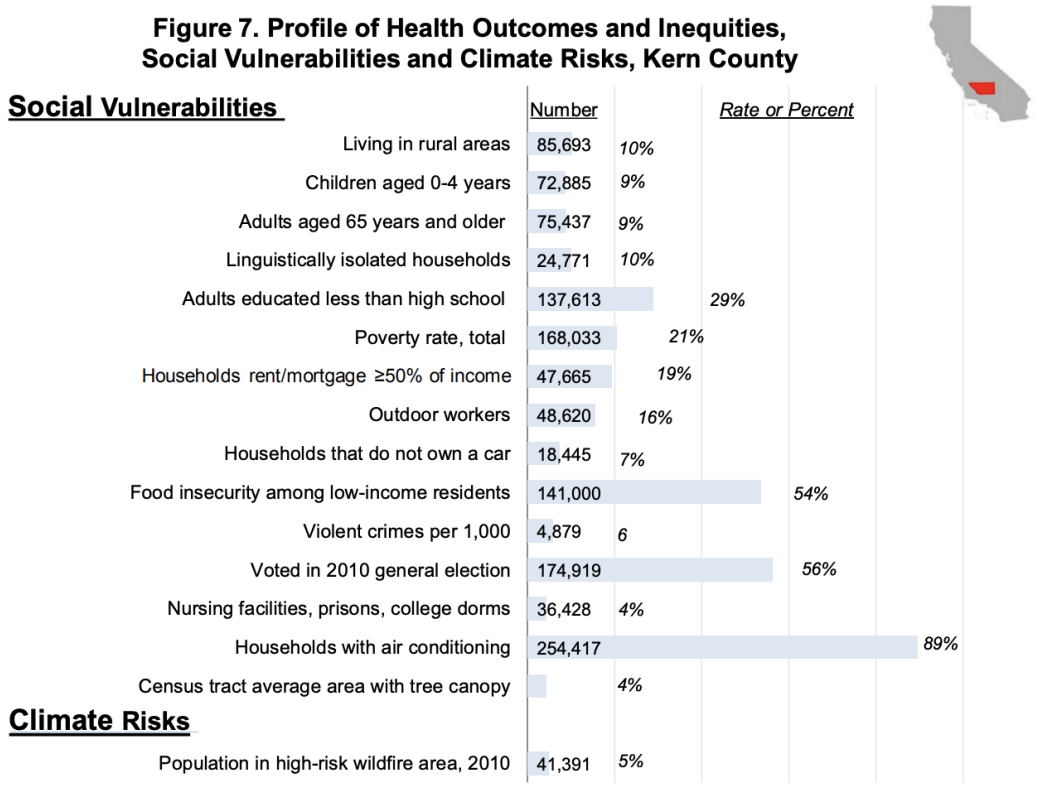


FIGURE 16:. A report by the California Department of Public Health in 2017 states climate change impacts the lives of Californians, especially the part of the population that is "vulnerable to intermediate or socioeconomic factors." From the Kern County's health profile, about 54% of the population experiences food insecurity (CA Department of Public Health, 2017). (Screenshot by Vivian Dinh, July 13, 2021)

4. STAKEHOLDER ANALYSIS

Stakeholders in Kern

Colin Donahue

The climate crisis in Kern County has its players that are at work to curb the problem or to increase the problem and then there are the people who are being affected by climate change. These are all stakeholders. They have something to gain or lose and the stake they have dictates their actions. In Kern there are stakeholders who are working to fix the climate crisis and those who are trying to maintain the status quo when it comes to oil drilling. Some want to keep oil drilling because the oil industry is a key part of Kern's economy and it supplies thousands of jobs, however the oil industry just wants to make more money. Examples of stakeholders in Kern would be the Kern County Board of Supervisors, Governor Gavin Newsom, President Joe Biden, frontline communities, community organizers like Juan Flores for the Center of Race, Poverty, & the Environment, the National Resources Defense Council (NRDC), Murray Family Farms, Kern County Farm Bureau, Kern County planning and natural resources department, and lastly the Center for Law, Energy and the Environment.

These ten examples of stakeholders range from local residents to the President of the United States. People like Juan Flores are vocal activists who raise awareness about the

climate crisis in Kern. They don't have much power, but they do what they can. President Biden and Governor Newsom have a lot of power and influence and can make fairly big changes that are usually in favor of the environment. On the other side, there are powerful and influential stakeholders that support the oil industry or are unsure of the severity of the climate crisis. The Kern County Planning and Natural Resources Department claims the oil industry is essential to Kern's economy. The Kern County Farm Bureau has a majority of farmers that don't think climate change is as serious as its made out, so little action comes from them (Kheel, 2016). The Kern County Board of Supervisors is another local institution that holds influence and they are more concerned about the jobs than the environment. The Center for Law, Energy and the Environment as well as the NRDC fight for change that will benefit the environment.

Different stakeholders have different perceptions of the climate crisis in Kern. Juan Flores from the Center of Race, Poverty, and the Environment perceives climate change as a big problem in Kern. Flores wants, "the Kern County Board of Supervisors need to look at other cities and counties around the state of California whose initiatives have provided beneficial jobs to the community while also protecting the environment. In doing so, we can shift the historic narrative of the deeply-rooted oil industry and generate highly paid good jobs" (Ramos, 2020). Flores even has a solution since the issue some other stakeholders have is that banning oil will eradicate thousands of jobs. The Kern County Board of Supervisors is one of those stakeholders. They are more concerned about the immediate well being of their community, which is understandable, but they need to look at the long term. They condemned, " Gov. Gavin Newsom's executive order Wednesday accelerating California's transition away from oil and gas production" (Cox, 2020). The board simply wants the best for Kern and they think that banning oil and gas will have extreme negative repercussions on the community. Governor Newsom is another stakeholder who seems to have a stake in both sides. He signs an executive order that will transition the state away from oil and gas production, but then he will allocate $200 million to oil and gas wells (Cox, 2021). Governor Newsom wants to transition away from oil and gas, but can't do it all at once. The most at risk to climate change in Kern are the

frontline communities. These are the people that live near the oil and gas drilling and have higher rates of health problems like asthma and cancer (Ramos, 2020). They want change and want to see their communities not polluted so that they can breathe clean air. Another stakeholder that works to curb the climate crisis is the Center for Law, Energy and the Environment. They think state and federal governments aren't doing enough to help Kern. They think that those with power and influence should do more in favor of the environment (Canon, 2021).

5. STAKEHOLDER ACTIONS

Taking a Stand for Kern County

Shannen Duke

Kern County greatly contributes to and is greatly affected by the impacts of climate change. From oil well pollution to chemical gas leaks and more, Kern County puts its residents at risk when it comes to combo disasters and the changing climate. With many stakeholders involved in the fight for climate change and environmental justice comes many different forms of action being taken (or not taken) throughout the county.

One of the main stakeholders that plays a part in the fight for climate change and environmental justice in Kern County is the frontline communities in relation to oil wells, chemical plants, and more. For instance, Arvin, California, is a frontline community in Kern County with “oil and gas wells sprinkled throughout their community” that release all kinds of toxic chemicals, gases, and fumes (Kane 2020). To fight against this environmental injustice, “a small group of mostly low-income, Latino residents is going against the grain, taking on the big oil companies … to protect the environment and their health” (Kane 2020). To take on these oil companies, Frontline community members in Kern County have “walked down all the streets [and] visited many homes so that [they] could explain

the problems that were going on" (Kane 2020). By informing others about what is happening right at their front door, frontline community members are gathering together and taking a stand as a united group that will not back down in the face of big oil businesses. Along with raising awareness on these issues and spreading the word, frontline community members have also filed many lawsuits against Kern County and against oil well companies for breaking environmental laws.

The Kern County Board of Supervisors is another stakeholder in the fight against climate change and environmental injustice in Kern County, however it appears that they are on the opposing team of this fight. The Board of Supervisors should be using their position of power to implement positive changes to the county in order to put an end to climate change and environmental injustice. This, however, is unfortunately not the case when it comes to Kern County. One of the main things that The Kern County board of supervisors has failed to accomplish is effectively communicating with their frontline communities, especially those impacted by oil well drillings nearby. For instance, "Not only were communities not informed of proposed drilling projects, all communications from Kern County and CalGem have been posted solely in English" (Ferrar 2020). By only posting information in English, Kern County officials are preventing any non-English speakers (especially the mainly Latino residents in Kern County frontline communities) from hearing the news and staying informed. Along with not informing citizens, the board is not listening to them, either. For example, the Kern County Board of Supervisors has "approved a massive increase in oil and gas drilling … despite having received major opposition from Kern County community members" (Ramos 2021). Even though they had heard over 250 residents publicly speak against the oil wells and had seen many petitions and letters against it, the board still chose to ignore their people and act on their own will at the expense of their citizens.

Air pollution and climate change are so prominent in Kern County that the issue has expanded beyond just the community level up to the state level. Governor of California, Gavin Newsom, has been doing his part to take action against climate change and

environmental injustice throughout the state and county. For instance, Governor Gavin Newsom has taken action against fracking, one of the oil industry's top contributors to climate change. He has "directed the state's top oil regulator, the Geologic Energy Management Division, to immediately begin crafting a regulation to halt new hydraulic fracturing permits by 2024" (Wilson 2021). Newsom has also taken action against climate change vulnerabilities when he "asked the California Air Resources Board to study ways to phase out all oil extraction across the state by no later than 2045" (Wilson 2021). Governor Newsom has shown that he is making an effort to address climate change and is trying to decrease risk and vulnerabilities from it.

Another stakeholder fighting against climate change and environmental injustice includes organizations dedicated to the movement. One of these organizations includes the Center on Race, Poverty, and the Environment. The "CRPE is a national environmental justice organization providing legal, organizing, and technical assistance to grassroots groups in low-income communities and communities of color" in the San Joaquin Valley (CRPE). One thing they did to reduce risks and vulnerabilities was host an event outside Kern Ag Commissioner Glenn Fankhauser's office where they called for " public disclosure of farmers' plans for applying certain cancer-causing fumigants" (Cox 2021). Another organization includes the National Resources Defense Council (NRDC). The "NRDC is tackling the climate crisis at its source: pollution from fossil fuels" (NRDC 2021). They dive into these issues through research and studies. Also, they fight in court cases against Kern County and oil well company officials to make a stand for their claims on the negative effects that oil well companies in Kern County have on climate change. They also have many different outlets of informing the public on these issues through various forms of media and on different types of information and resources.

Among other organizations fighting against climate change and environmental injustice, the Kern County Farm Bureau is a climate-change-centered organization dedicated to informing others about climate change and actively working to put an end to it. For instance, "the Kern County Farm Bureau issued a "call to action" this week asking local growers and ranchers to participate in a series of upcoming meetings that will

influence the role California's agricultural lands will be expected to play, or continue to play, in fighting climate change" (Cox 2021).

One stakeholder sending mixed signals on their place in this fight against climate change and environmental injustice is the Kern County Planning and Natural Resources Department. On one hand, The Kern County planning and natural resources department seems to be making a positive impact by planning to use materials and resources that are better for the environment and for Kern County residents. For instance, "Oviatt, director of Kern's Planning and Natural Resources Department, has insisted her staff will continue to pursue a strictly ministerial oil permitting system that also provides environmental cover for state drilling permits within county limits" (Cox 2021). However, the Kern County planning and natural resources department appears to be more bark than bite when it comes to taking action against climate change. For instance, the California District's Fifth Court of Appeals found deficiencies in upholding environmental law "related to loss of farmland, air and water quality, the county review's health-risk assessment and noise impacts. While the county included new analysis and information, the only new environmental mitigations called for in the new draft, Oviatt said, are mitigations intended to protect sensitive areas from construction noise" (Cox 2021).

Overall, there are many different stakeholders in Kern County, each with their own goals, motives, and objectives. If these different stakeholders can come together to fight for a common goal, Kern County has a chance to fight against big oil well companies and save their home.

6. ROLE OF MEDIA AND BIG ENVIRONMENTAL ORGANIZATIONS

An Outsider's Perspective

Will Welker

Kern county is infamously known for its large oil industry and environmental concerns. According to data from the U.S. Energy Information Administration, In 2019, Kern was ranked the 7th highest oil-producing county in the nation, yielding 119 million bbl of oil annually. Due to Kern's concerningly high oil outputs, big media outlets often use the county as an example to express the current fracking crisis in our country.

In recent years as climate change has received more recognition, media sources, specifically those based in California, have released many publications regarding the situation in Kern County; these sources include the LA Times and the Bakersfield

Californian. Most of this coverage is centered around the actions Kern has taken against environmental concerns and in favor of the oil industry. One of the widely publicized events covered by many media sources was the lawsuit against Kern County that took place in 2020. "A state appeals court ruled last year that a 2015 Kern County ordinance violated the California Environmental Quality Act by not fully evaluating or disclosing environmental damage that could occur from drilling" (Hong 2021). When writing on the situation in Kern, media sources also tend to cover the public health effects of the pollution in Kern. Many of the articles about Kern's pollution seem to use the same statistic from the American Lung Association, which states that Bakersfield is #1 in short term particle pollution, #2 in year long particle pollution, and #3 in ozone.

Kern County has also received recognition from many environmental organizations; some of these groups include Center for Biological Diversity, Earthjustice, and Sierra Club. Most of these organizations tend to focus more on bringing justice to those living in Kern, as well as actions the community has taken to bring the power back to the people. One action taken by community members which was covered by Sierraclub and Earthjustice was the gathering of over 7,000 petition signatures to oppose further oil drilling expansion (Williams 2021). Not only are these organizations raising the voices of Kern citizens, they are also helping to conduct accurate environmental assessments for the community's well-being. Clean Water Action, an American environmental advocacy group, partnered with the CCEJN, the University of Washington, Earthworks, and the California Environmental Health Tracking Program to place monitors in Lost Hills, Kern County to detect pollutants like Particulate Matter and Volatile organic compounds. With accurate environmental assessments, these organizations are helping to spread credible information on the environmental health of communities.

Kern County's Wikipedia page only briefly covers their environmenmental problems. The article only covers the poor air quality caused by particulate pollution in Kern; however, the article does not identify the cause of this pollution. While they do talk about Kern's oil

and agriculture industry, they only speak of their economic benefits and not their environmental damages.

7. RECOMMENDED LOCAL ACTIONS

The Positive Feedback Loop Effect

Negin Pourgholam

Climate change and environmental hazards have been proven to have a positive feedback loop in which a mutualistic relationship is present. This means that the increase of one factor leads to an increase of another factor. Therefore, with an increase in climate change, due to rising temperatures, volatile chemicals within fertilizer depots are more likely to react and lead to explosions. With that comes an increased risk of releasing lots of toxic chemicals into the atmosphere. Chemicals which can be fatal to humans. Releasing chemicals can also increase air pollution and further damage the Ozone layer. Furthermore, with the deterioration of the Ozone layer, ultraviolet rays increase the amount of UV light which the Earth is exposed to, further increasing global warming. With this, the continuous effect of Climate Change and Environmental hazards continues in a cyclical pattern.

Environmental hazards that can be caused by climate change and global warming include an increase of air pollutants as well as explosions within power plants and fertilizer depots as mentioned previously. For example, in 2016, there was an explosion within a fertilizer depot in Texas caused by climate change (Source 1). This killed several workers and exposed pollutants including Hydrogen sulfide and Ammonia. This event led to a rise of worries for a proposed fertilizer plant in Kern County. In a densely populated place like

Kern County, the risks are even higher because an explosion such as the one that occured in Texas can expose surrounding areas including residential areas and schools to toxic chemicals.

Some extra local actions that can be taken to reduce these significant risks can include stricter regulations on where depots, oil drillings, and gas wells can be located, taking into consideration the surroundings, the climate and the topography. (Source 2) Stricter regulations can also include limiting the number of permits given out and the qualifications needed for those permits. Some local actions that can also be taken include the decrease of vehicle use, implementing systems such as the alternative license plate rule or more access to public transportation. All of these actions work to decrease the number of air pollutants released, reduce risks of explosions, and overall promote a healthier community and environment.

Local actions where the community participates in movements to protect the environment can be implemented and can have tremendous impact and benefits. However, the actions of the larger controlling systems including national governments and leaders of big corporations are highly influential and impactful, therefore their actions are needed to make big changes within how the oil drilling, fertilizer depots, and further environmentally hazardous infrastructures are regulated.

Conclusively, the number one most important thing would be extra-local actions. But following that, the first priority local action would be for local governments to implement systems which promote cleaner air. This includes reducing the number of vehicles, reducing diesel emissions, and stricter regulations on the emissions from big corporations within the county. The priority that comes next should include local governments pushing extra-local governments to take larger action and create change within the ways in which systems are regulated. With the combination of small efforts created by local governments and large regulation changes created by extra-local governments and policy

makers, there can be large impacts made in which places such as Kern County move towards creating a healthier environment.

(Sources also includes in bibliography)

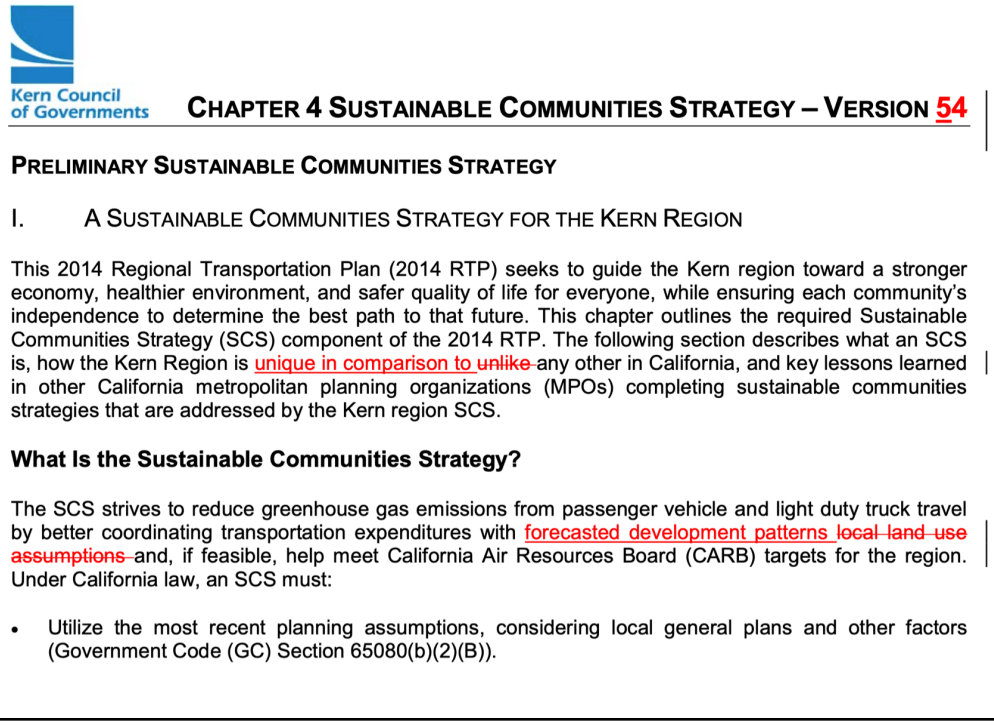
Source 1:

"Kern County's Future in the Face of Climate Change." Advancement Project. Advancement Project, April 2019. https://www.advancementprojectca.org/wp-content/uploads/2019/05/AP-Kern-Climate-Adaptation-May-2019-8.5-x-11-single-page.pdf.

Source 2:

Cox, John. "Texas Blast Worries Neighbors of a Proposed West Kern Fertilizer Plant." The Bakersfield Californian, September 13, 2016. https://www.bakersfield.com/news/texas-blast-worries-neighbors-of-a-proposed-west-kern-fertilizer-plant/article_d56181a8-8018-5f4c-a371-3632089d5b18.html.

LOCAL CLIMATE ACTION PRIORITIES



Kern Council of Governments

CHAPTER 4 SUSTAINABLE COMMUNITIES STRATEGY – VERSION 54

PRELIMINARY SUSTAINABLE COMMUNITIES STRATEGY

I. A SUSTAINABLE COMMUNITIES STRATEGY FOR THE KERN REGION

This 2014 Regional Transportation Plan (2014 RTP) seeks to guide the Kern region toward a stronger economy, healthier environment, and safer quality of life for everyone, while ensuring each community's independence to determine the best path to that future. This chapter outlines the required Sustainable Communities Strategy (SCS) component of the 2014 RTP. The following section describes what an SCS is, how the Kern Region is unique in comparison to ~~unlike~~ any other in California, and key lessons learned in other California metropolitan planning organizations (MPOs) completing sustainable communities strategies that are addressed by the Kern region SCS.

What Is the Sustainable Communities Strategy?

The SCS strives to reduce greenhouse gas emissions from passenger vehicle and light duty truck travel by better coordinating transportation expenditures with forecasted development patterns ~~local land use assumptions~~ and, if feasible, help meet California Air Resources Board (CARB) targets for the region. Under California law, an SCS must:

- Utilize the most recent planning assumptions, considering local general plans and other factors (Government Code (GC) Section 65080(b)(2)(B)).

FIGURE 17: In 2014, The Kern Council of Governments published this sustainable community strategy plan which includes plans created to guide the County towards

solutions to decrease environmental hazards such as air pollution in order to decrease health risks. This publishing includes plans of moving the majority of the population within the region to more sufficient and better areas.(Kern Council of Governments, 2014) **(Screenshot by Negin Pourgholam, July 14, 2021)**

PROPOSED CLIMATE ART PROJECT

FIGURE 18: The climate artivism project we proposed is something in the form of an environmental fair, where people can attend workshops or watch documentaries about how the environment around them may affect their health. Additionally, this type of project can be presented in different places such as at schools or at the local city halls in Kern County. Activities that may be used to encourage attendance include making t-shirts, hats, lanyards, or bracelets during spirit week/day to promote environmentalism or activist groups that advocate for reducing pollution in the area. The goal of this project is to raise awareness on climate change, how it is impacting people's health and the environment they live in.
https://www.bakersfieldcity.us/426/Keep-Bakersfield-Beautiful
(Screenshot by Kelly Guan, July 14, 2021)

8. RECOMMENDED EXTRA-LOCAL ACTIONS

What can the state do?

Vivian Dinh and Kasumi Kiriakidis

Environmental Governance at National Scale [Kasumi Kiriakidis]

There have been many calls to place stricter environmental policies, and there have been many attempts to combat climate change even just within the last few years - but is it enough? The global temperature is rising at a rapidly increasing rate, summers are hotter, winters are colder, and many people are affected by the effects of climate change, especially by air pollution. What can the government do then, to help better the lives of many people?

The first, and the most discussed topic, is transitioning from fossil fuels to renewable energy. Since fossil fuels produce greenhouse gases, there are many calls to transition to renewable energy, which does not produce any. By doing this, the amount of pollution in the air can be decreased. This could also reduce dependence on imported fuels - which is accident-prone and unsustainable. ("Fossil Fuels Pros and Cons", 2020) It also "[creates] economic development and jobs in manufacturing, installation, and more." ("Local Renewable Energy Benefits and Resources", 2017)

In addition to abandoning fossil-fueled energy, the federal government should place more regulations and policies to prevent further emissions of greenhouse gases. Greenhouse gasses are considered to be the primary source of air pollution, such as the many oil and gas drills in Kern County emit methane, which is a greenhouse gas and "the [oil] industry is responsible for 38% of all methane emissions in the United States." ("Drilling Pollution and Solutions", 2021a) For example, if the federal government passed regulations enforcing oil and gas drilling stricter, it could help reduce the amount of greenhouse gases emitted each year. It will lead to less pollution, which will better the living conditions and health conditions of many people - especially people like the residents of Kern County.

However, these measures to combat climate change are disapproved of by many industries who benefit from fossil fuels. Some companies including ExxonMobil, a gas company, have suggested that governments implement carbon capturing and sequestration (CCS) as an alternative to banning activities like fracking and banning gas-powered cars. It's a type of geoengineering which directly removes carbon from the

atmosphere. The biggest benefit of CCS is that the carbon (more specifically, carbon dioxide) that already exists in our atmosphere can be taken out, reducing the greenhouse gases which pollute our air. However, it has many disadvantages. The carbon dioxide captured by CCS is put into storage, which obviously is not infinite. If the capacity of the carbon dioxide storage exceeds, there won't be anywhere to store it. There is also a risk of the stored carbon dioxide leaking, which will then pollute the air, thus defeating the purpose. Furthermore, some of the carbon dioxide being captured is currently being used to enhance oil recovery. "In this process, oil companies purchase the captured CO2 [carbon dioxide] and inject it into depleted oil wells in order to free up otherwise unreachable oil. When that oil is eventually burned, it will release more CO2 into the atmosphere." (Rhodes, 2019) This, again, defeats the purpose of carbon capture, thus making it overall unbeneficial to proceed with, as many environmental organizations argue.

Environmental Governance Possibilities by the State of California [Vivian Dinh]

To combat the threats and hazards that are caused by climate change, the State of California can take some actions to help stop carbon emissions in efforts to reduce the effects of climate change and global warming. These measures will be listed in the order of priority of what can be accomplished sooner with the least amount of complications. The first measure that should be taken is to enforce laws to protect California's natural resources in addition to planting more trees and expanding agricultural lands for vegetation.

This measure should be the first measure taken because this action would have less opposition, as well as it being one of the more simpler to accomplish. According to research done by Nature's Conservancy, "With the right policies… California can use its natural and working lands to reduce emissions by 514 million metric tons over the next 30 years" (Roth, 2020a). By protecting these lands and planting more trees, this will greatly

reduce and absorb carbon emissions not only in Kern County but throughout California as well. The next action that should be done is to focus on other renewable energy technologies such as geothermal power, offshore wind, rooftop solar and battery powers (Roth, 2020b). This would benefit the county as they can start to move away from the oil refineries which can lower the potential threats that come with climate change. The Kern County Board of Supervisors would most likely oppose this possible action because replacing the oil drills to and building new renewable sources would be very costly.

This action would be second priority because this is another smaller step that can be accomplished, by adding new sources of energy instead of building more oil refineries. The next priority action would be by enforcing “decarbonizing transportation” (Roberts, 2017). By switching out gas powered transportation to a more carbon-free friendly transportation, this would greatly lower the amount of emissions released into the environment across California. These benefits could be seen when the stay-at-home order placed for the COVID-19 pandemic led to a drop in “harmful oxide of nitrogen emissions” (Wilson, 2020). Those that might have issues with this step would be residents of California that might not have the funds to completely switch to clean energy, but if all new vehicles have standards and enforcements to be electric, this can be the first step in transitioning all vehicles until older cars die out.

The next course of action that should take place is the “shutdown of a string of high polluting, natural gas-fired power plants” (Kasler, 2020). By completely shutting down gas powered power plants would lead to more use of renewable energy instead and would overall lower carbon emissions. Those against this action would be the power plant and oil companies that run these plants. This action is further down the priority list because despite the already current fines for carbon credits, these large companies are still producing large amounts of emissions which will be a difficult task to overcome.

The last action has already taken place in which “Governor Jerry Brown declared that the California economy… would be net zero carbon emission by 2045” (Murray, 2019). This

action would benefit Kern County as this would lead to the decreased amount of carbon emissions in the area, and most importantly help the frontline communities that are suffering from the oil drill carbons. In terms of Kern County, the Board of Supervisors will oppose this direction because the economy in this county is purely based on the oil that is being produced in the region. By starting off with the steps that are “easier” with fewer opponents, the goal to reach a zero carbon economy would be achieved.

9. RECOMMENDATIONS FOR FUTURE RESEARCH

What else can we learn?

Vivian Dinh and Kasumi Kiriakidis

Missing Quantitative Research [Kasumi Kiriakidis]

What kinds of pollution research are needed in Kern County?

We are very aware of the fact that the oil and gas industry is mostly responsible for the air pollution in Kern County. But there are other factors that contribute - like wildfires. Because of its arid climate, much of the state of California suffers from a number of wildfires each year. Greenhouse gas emission caused by humans is the most crucial and should be prioritized in lawmaking and research, these other factors should also be taken into consideration. What are the other factors that cause air pollution in Kern County? What can be done to combat those factors? What might be some underlying causes of the increasing greenhouse gases?

What kinds of health research are needed in Kern County?

While health concerns directly caused by air pollution (i.e. asthma, cancer, etc.) are crucial to acknowledge when discussing the air quality in Kern County, it is also important to see other factors that may be worsening the residents' health. As of July 14, 2021, only about 40% of Kern County residents have gotten at least one dose of the COVID-19 vaccine ("Tracking the coronavirus in Kern County", 2021) - which is surprisingly low, compared to the vaccination rate of the state of California, where more than 60% of the residents are fully vaccinated ("Vaccination progress data", 2021). Data such as these confirm that medical attention is gravely needed in Kern County. Thus, knowing the vaccination rates of diseases and comparing them with health concerns raised by air pollution may be beneficial in seeing other factors, although indirectly, are not helping or worsening the situation.

What kind of quantitative social survey data is needed in this county?

To better understand the perspective and experience of Kern County residents on the air conditions they live in, a quantitative social survey on summer activities may be helpful. Since air quality is continually decreasing, some people may have noticed a slight change - maybe they have more trouble breathing, more trouble seeing far ahead because of all the smog, and so on. Many activities during the summer take place outdoors, like swimming, having picnics, etc. How many activities they usually do or did last year and wanted to this year had to be changed to indoor activities due to the poorer air quality? The answers Kern County residents give us could let us see a sense of the changes air quality caused that are subtle, but were undeniably affected by the air pollution.

Qualitative Research Design Proposal [Vivian Dinh]

To address the environmental hazards that are found in Kern County, further qualitative research can be done to shed light on how much Kern County residents know the dangers of their environment and if they are prepared for the worst case scenarios. This

qualitative research will attempt to answer the following question: “In terms of emergency preparedness, do the residents of Kern County feel like they are prepared, and or feel like their county is prepared for the repercussions of climate change related worst case scenarios?”

The social groups that will be focused in this study would be in general, all of the residents of Kern County. However, particular attention can be given to lower income communities, or communities that live in red zone, high threat, areas which for them, preparing for these worst case scenarios of a climate change disaster is not within financial budget or time. To gain access to these social groups, locating areas with lower income families and areas of higher threat areas for disasters would be the best way to gain access for this study. A way to determine where these high threat areas are located is to utilize the California Public Utilities Commissions Fire Map. Participant observation can answer these research questions as it will demonstrate how Kern County residents feel about their preparedness and the county’s preparedness, and will give insight on whether or not the residents are aware that they reside in a dangerous community in terms of disasters caused by climate change.

The in-depth interview for this qualitative study, in addition to getting insight on the resident’s awareness of danger preparedness, will also be an opportunity to educate residents on climate change and how they can prepare when and if disasters do happen. Some possible interview questions would be:

1. According to the California Public Utilities Commissions Fire Map, a large portion of Kern County are shaded red and yellow, meaning they are extreme threat areas and elevated threat areas to fires respectively (CPUC, 2021). As a resident of KErn County, are you aware of the risks that come with living near these oil drills and the potential hazardous threats that come with the increasing climate change?
2. Do you, as an individual, feel like you are prepared for the worst case scenarios? In addition, do you feel like Kern County has solid protocols when it comes to handling these worse case scenarios such as evacuations plans and fire restoration?

3. In March 2021, the Board of Supervisors in Kern County approved an ordinance that would “significantly accelerate drilling – with as many as 40,000 new oil and gas wells in Kern by mid-2030” (Green, 2021). This would thus cause a greater threat level to fire hazards to residents that reside by these oil and gas wells. In your opinion, do you think the county should fund emergency supplies and health care to frontline residents?

This research will most likely be useful for environmental activists groups as this would shine light on how much residents really know about their home environment. In addition, this would also be useful to residents to make them aware and learn about possible steps or emergency plans that can help them in the future when worst case scenarios do happen.

10. INJUSTICE ANALYSIS

How bad are the injustices in Kern County?

Hunter Walsh and Kelly Guan

For residents of Kern County, injustice is not a new issue. Residents face injustice all around them, from economic injustice in the forms of poor jobs for many residents to data injustice when it comes to finding facts about the pollution around them.

Many residents of Kern County fall victim to data injustice due to misinformation put out by oil companies or lack of information put out that tells citizens about their situation. In Kern County, only 64% of residents believe in taxing oil companies more, which is much less than the 72% statewide. Although residents of Kern County feel all of the negative effects of the pollution these companies put out, many still choose to support them due to being misinformed by big oil companies who wish to remain in Kern County and keep profiting off of them. To combat this injustice, many residents in Kern county join advocacy groups in order to educate their fellow residents about the health effects of fracking and how 97% of fracking occurs in Kenn County. One example of these groups would be the March for real climate leadership, who organized 8,000 residents to march in Oakland against fracking (March for climate leadership 2020, 41). Although this organization may have been the largest anti fracking protest in the U.S, more needs to be done to end fracking and educate citizens about the pollution by oil companies.

Racial injustice in Kern County is also a major issue that needs to be addressed. In Kern County, 72% of people living within a mile of oil and gas development are black or latino. In California this number rises to almost 92% (Rowe 2016,40). Racial injustice is often

silenced, with little attention being brought to how racial injustice is prevalent in housing near oil companies. To fix this, attention needs to be brought upon the issues and big oil companies need to be pressured to pay for citizens to move out of danger areas. However enough attention will never be brought to these issues with the economic injustice between citizens and oil companies. Citizens close to these oil mines often live in poverty with little power to do anything against big corporations who have millions of dollars to spend. This then leads to epistemic injustice to silence or discount citizen's opinions when they speak up in order to keep drilling. Injustices remain prevalent in Kern County and many steps must be taken in order to minimize and eventually stop these injustices from occurring on a daily basis.

Furthermore, Kern County faces injustices not only from within but also from the outside. In regards to infrastructure injustice, since Kern County is oil abundant, the amount of investment into infrastructure is not insufficient, however the investment is not put to good use because the goal is to build many oil wells to extract as much oil as possible. An example was the amount of funding provided by the oil industry described by "a county analysis done last year that found that the oil and gas industry funded the county to the tune of almost $200m a year," which is a significant amount of money that may be used for different areas of Kern with purposes not provided to the public (Canon, 2021). However, by just looking at the economic standpoint, this disregards the health of the county and amount of pollution that will be released because regulations are not strict enough that companies will have to change their infrastructure to accommodate less emissions. Ways this can be resolved is to have health officials increase the regulations for the oil refineries/companies because the air quality in Kern County is very poor and contributes to the rising temperatures and makes the area more prone to wildfires. Moreover, Kern County can have environmental agencies collect data on how much levels of air contaminants can increase with the addition of new oil wells and provide suggestions on how oil companies can purchase new technology to decrease the amount of air contaminants. In regards to media injustice, there is news coverage about the profits and amounts of oil coming from the oil wells in Kern County, but less coverage about the

health problems that have been a result of the pollution from the oil wells. Additionally, attempts to try to spread awareness about the pollution have not been successful with a reason being that “$22 million of oil lobby money flooded the state legislature in 2015,” and that “Big Oil effectively gutted or defeated bills that the oil industry opposed,” very common examples of how money from the big oil companies have been able to silence the residents and activist groups in Kern County that oppose new oil wells and are trying to speak up about the air pollution that damages their health (Rowe, 2016). Methods this injustice may be addressed are to have the local and state news cover more stories about the harmful pollution that is impacting the health of oil workers, farmworkers, and residents of Kern County. Similarly, people from Kern County can talk about their daily lives and their experiences living in such a polluted area on the news or use social media to hopefully influence viewers and environmentalists in other areas of the nation to help advocate for reducing the amount of emissions and pollution in Kern County. Once again, the injustices in Kern county are so diverse and abundant that we can only hope that officials in Kern County can take suggestions and recommendations provided by the activist groups to improve health conditions and reduce the pollution that is affecting things in Kern such as the climate before an irreversible disaster occurs.

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FIGURES