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Journal

npj Climate Action, 5(1)

Author

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Publication Date

2026-05-14

DOI

10.1038/s44168-026-00382-2

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https://doi.org/10.1038/s44168-026-00382-2

The public university as a potential just transition hub

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Paul Almeida

Public universities surrounded by frontline communities create the potential to serve as focal points for just transition strategies to address the climate crisis. University students from environmental justice communities can serve as just transition ambassadors as trusted messengers to facilitate equitable climate solutions and green workforce development. In the context of finite financial resources, state agencies and philanthropic foundations should consider prioritizing investing in units within universities working with disinvested and low-income populations. More specifically, investing in university labor centers offers the greatest likelihood of obtaining desired outcomes. A case study of the University of California, Merced, is presented as a model for designating public universities in regions with high densities of climate-vulnerable groups as hubs for implementing just transition practices.

The University of California, Merced (UCM), the University of California's tenth campus (established in 2005), sits in the heart of a vast area of disinvested and climate-vulnerable communities in the San Joaquin Valley. The university is well-placed to transform climate mitigation and adaptation in the region on a just transition trajectory. This is not a given; the competition between decarbonization-only solutions and just transitions plays out at the micro-level of universities as complex organizations. UC Merced serves as the first carbon-neutral campus in the United States, and most of its buildings are LEED certified[1]. In 2022, the university received $18 million from the state of California to invest in climate action research via California Assembly Bill 179. California state law (SB 535, AB 1550, and Proposition 4) requires 25–40% of all state climate investments to be allocated to disadvantaged communities (defined as high pollution levels combined with low household incomes and displayed in Figs. 1 and 2)). This article provides a roadmap on how to best leverage UC Merced to transform the San Joaquin Valley (and the larger state) into an exemplar for high-road jobs in a green economy and a model for just transition planning as opposed to the status quo ecological modernization vision that perceives the university as only promoting research and education focused on climate mitigation and carbon sequestration within neoliberal economic structures.

Support for the university as a just transition hub

The UCM Office of Sustainability sponsored an online survey implemented with the entire campus community. The census survey was conducted between February 20 and March 8, 2024, to gather views on a just transition in decarbonization for the campus and surrounding community as mandated by the UC system's Office of the President's (UCOP) Pathways to Fossil Free UC Task Force[2]. The survey reached nearly one in three members of the university (30% of the entire campus and over 3300 respondents), with relatively equal representation from undergraduate and graduate students, faculty, and staff[3]. By identifying and amplifying campus support for inclusive community initiatives, the survey paves the way for progress towards equitable decarbonization consistent with the just transition pathway. As the nation's first public research university (and first UC campus) to achieve carbon neutrality, UC Merced has become a recognized leader in decarbonization. Sustainability is a valued aspect of the UC Merced campus, enhancing campus energy efficiency and reducing emissions. UCOP mandates all UC campuses to attain carbon neutrality by 2045. UCOP also prioritizes equity and energy justice research in collaboration with nearby communities in the larger region where the 10 campuses are located[4]. This obligation has urgency for UCM, given the lack of climate planning in the San Joaquin Valley (SJV) and the fact that the campus sits in the center of a vast region of contiguous environmental justice communities.

Table 1 shows results from the campus-wide survey. At the scale of the university, there is a high level of interest in making a climate adaptation transition in the SJV. The table provides information on the level of campus interest in UCM engaging in equitable climate planning in the SJV consistent with a just transition trajectory. Large majorities give moderate to strong support (70–78%) for most of the climate action initiatives enumerated in Table 1. These efforts include using UCM resources (technical, educational, financial, human) to partner with low-income communities and local governments with climate action planning throughout the region. The starting point may be to develop an inventory of climate change assets maintained by UCM that would assist with regional climate action planning. Such an inventory would include a list of students, staff, and faculty working on climate-related projects or who maintain relevant skill sets such as curriculum, publications, equipment, knowledge of the implementation of low-carbon energy systems, and experience in climate mitigation, resiliency, and adaptation, as well as trust already established in local environmental justice communities. At UC Merced, this inventory would best be managed

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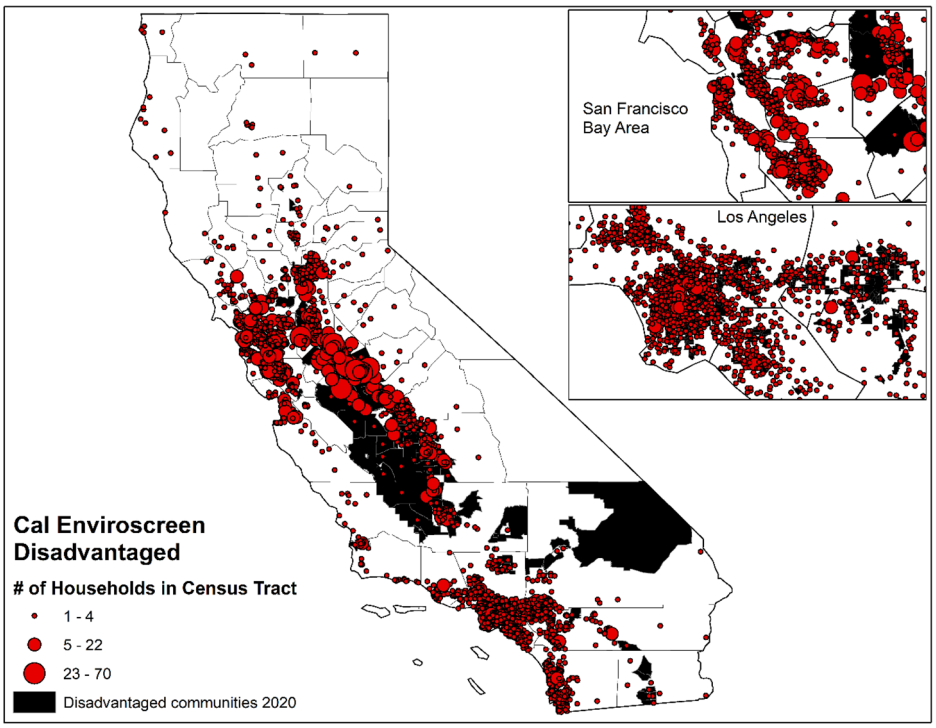


Fig. 1 | Map of UC Merced students and environmental justice communities CalEnviroScreen 4.0.

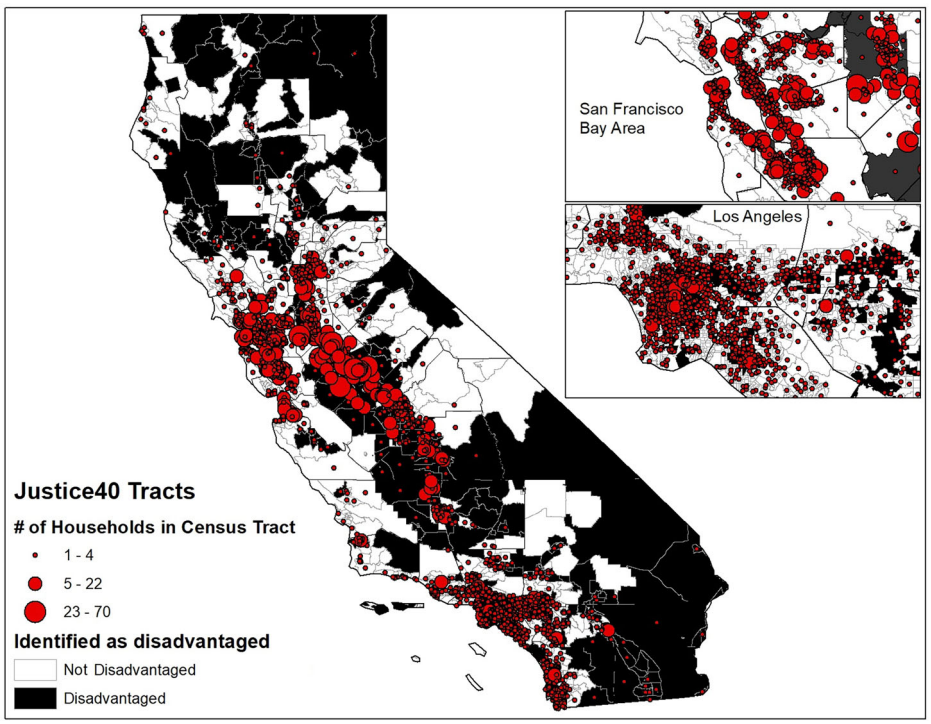


Fig. 2 | Map of UC Merced students and environmental justice communities Justice40.

within the Community and Labor Center where just transition-type projects are already established and the original concept of just transition emerged from the labor union movement.

The results in Table 1 indicate a considerable amount of support for transitioning away from fossil fuels and implementing climate action plans within the SJV, particularly with regards to support for nearby low-income communities. This highlights a collective recognition of the importance of addressing climate change impacts and planning, especially for vulnerable communities. Because climate change disproportionately impacts disinvested populations[5], support suggests a willingness from the UC Merced community to allocate resources and efforts towards equity-driven climate action within the surrounding region. Initiatives in this direction should also address the four environmental justice concepts of procedural, recognition, distributive, and restorative justice[6] by ensuring community engagement and prioritization during transitions in climate action and planning efforts[7].

Table 2 shows high levels of endorsement for external investments coming into UC Merced to facilitate a low-carbon and equitable

Table 1 | How much do you support the following statements to transition away from fossil fuels?

Statement	No support	A little support	Moderate support	Strong support	Total
UC Merced should use its resources to assist local communities in the San Joaquin Valley in formulating climate action plans	5.21% (175)	20.45% (687)	40.19% (1350)	34.15% (1147)	3359
UC Merced should prioritize assisting low-income communities in the San Joaquin Valley in formulating climate action plans	5.79% (194)	20.15% (675)	35.01% (1173)	39.04% (1308)	3350
UC Merced should use its resources to assist local governments in the San Joaquin Valley in formulating climate action plans	5.98% (200)	23.04% (771)	39.44% (1320)	31.55% (1056)	3347
Climate Action Plans in the San Joaquin Valley should emphasize equity considerations for low-income populations (e.g., access to low-cost alternative energy)	5.21% (174)	16.49% (551)	34.17% (1142)	44.14% (1475)	3342
UC Merced should work with the city of Merced to revise the city's 2009 climate action plan with a focus on equity and protecting low-income residents from climate change	5.47% (183)	18.31% (612)	35.81% (1197)	40.41% (1351)	3343
Low-income communities in the San Joaquin Valley are the most impacted by climate change	5.71% (190)	19.17% (638)	33.62% (1119)	41.50% (1381)	3328

Table 2 | How much do you support the following statements about funding UC Merced to participate in the transition away from fossil fuels in the San Joaquin Valley?

Statement	No support	A little support	Moderate support	Strong support	Total
The University of California System should invest in UC Merced to facilitate the economic transition away from fossil fuels in the San Joaquin Valley	4.02% (130)	18.43% (596)	34.74% (1123)	42.80% (1384)	3233
The State of California should invest in UC Merced to facilitate the economic transition away from fossil fuels in the San Joaquin Valley	4.59% (148)	16.96% (547)	33.38% (1077)	45.07% (1454)	3226
The Federal Government should invest in UC Merced to facilitate the economic transition away from fossil fuels in the San Joaquin Valley	5.09% (164)	17.19% (554)	32.46% (1046)	45.25% (1458)	3222
Philanthropic Organizations should invest in UC Merced to facilitate the economic transition away from fossil fuels in the San Joaquin Valley	5.51% (177)	19.63% (631)	35.55% (1143)	39.32% (1264)	3215
UC Merced should work with community colleges, labor organizations, and community groups in training programs to provide San Joaquin Valley residents with opportunities to work in the green energy jobs sector	3.23% (104)	15.05% (484)	32.24% (1037)	49.49% (1592)	3217

Table 3 | To make policy changes addressing climate change, which of the following activities would you be willing to do? (mark all that apply)

Climate change activity	Willingness to do activity	Total
Attend a campus meeting about addressing climate change	58.20% (1604)	2756
Attend a community meeting about addressing climate change in the San Joaquin Valley	31.31% (863)	
Attend a community meeting about climate change that focuses on equity issues	29.20% (805)	
Organize a meeting about addressing climate change in a San Joaquin Valley town or city	13.28% (366)	

economic transition within the San Joaquin Valley. Three out of every four UCM respondents (between 75 and 78%) support such funding. This includes funding from UCOP, federal and state government, and philanthropic foundations. Future funding should be closely tied to UCOP's just transition goals of working with communities with accountability mechanisms and benchmarks to avoid falling into non-compliance. The statement receiving the highest level of support from the campus community in Table 2 centers on collaboration with the local community in direct training for green jobs as highly desired (with 8 out of 10 respondents stating moderate or strong support). This suggests an awareness of the importance of inclusive economic transition strategies that prioritize workforce development through direct community engagement. This type of broad university sentiment can drive the early stages of UC Merced collaboration and facilitation of workforce agreements, coordination with training programs to ensure local and underrepresented populations are included in the energy workforce transition throughout the SJV. Currently the university's Community and Labor Center supports such projects.

Table 3 examines willingness to participate in civic engagement to begin large-scale climate action planning efforts. UCM may serve as a hub for climate action initiatives in the region, while individual students (see below), staff, and faculty can act as nodes in accelerating the decarbonization process on multiple fronts (e.g., climate action plans, community solar initiatives, green workforce development, public climate education, and nature-based solutions). In Table 3, respondents were more likely to state they would attend a meeting on campus (58%) than other forms of participation. Consistent with representative surveys in the SJV in terms of participation rates in climate meetings, ~30% of campus respondents expressed willingness to attend a community meeting about climate change in the SJV[8]. A nearly equal amount (29%) was willing to participate in a local off-campus climate meeting with an equity focus. Hence, UCM maintains a vast sympathy pool for climate action with nearly one in three campus members ready to engage in community dialog to initiate climate planning, while over half of respondents are willing to participate in climate action on campus. Over one in ten respondents is even prepared to organize such a climate meeting off-campus, a more time-intensive commitment.

Table 4 | UC Merced undergraduates living in environmental justice communities

UCM undergraduate students	Reside in a California disadvantaged community (CALENVIROSCREEN 4.0/OEHHA)	Home residence/high school borders a California disadvantaged community (CALENVIROSCREEN 4.0/OEHHA)	Reside in a Federal disadvantaged community (US EPA/ environmental justice screening tool)	Home residence/high school borders a federal disadvantaged community (US EPA/environmental justice screening tool)
All UC Merced students (year = 2024) $N = 8367$	44% (3644)	64% (5305)	49% (4105)	75% (6219)
Representative Sample of UC Merced students (year = 2023) $N = 398 \pm 5\%$ error	42% (168)	64% (256)	49% (196)	73% (292)
Representative sample of UC Merced feeder high schools (year = 2023) $N = 400 \pm 5\%$ error	36% (144)	59% (237)	66.5% (266)	70% (279)

A plan to initiate a regional just transition via an environmental justice university

In order to actually achieve just transition goals of equitable climate action planning and high road green workforce development, the university needs direct links to the hundreds of environmental justice communities in the San Joaquin Valley and beyond. UCM may also serve as the hub for the entire state for just transition planning based on the distribution of its 8300 undergraduate students. The undergraduate student population has a median household income of $57,160 (well below the California state level of $100,000), and 60% of students receive Federal Pell grant funding for exceptional financial need (more than any other UC campus). 91% of students at UCM identify as nonwhite, with 54% identifying as Latinx, 22% as Asian American, 9% as white, and 5% as African American. Nearly all students come from households in California—another incentive for greater levels of California state government investment[9].

Table 4 and Figs. 1 and 2 display the distribution of UCM undergraduates living in environmental justice communities (high pollution levels and low-income) as measured by the California Environmental Screen and the federal government's Justice40 initiative. Nearly half of all students report their households as located in a CalEnviroscreen Disadvantaged Community or an EPA federally designated disadvantaged community (referred to as Justice40 communities for 40% of national climate investments). Nearly two out of every three students live in a census tract that borders a CalEnviroscreen Disadvantaged community, and three out of four students reside on the border of a Justice40 disadvantaged community. Because pollution does not respect census tract boundaries, bordering neighborhoods are also at risk for the same environmental hazards[10]. The students' high schools are also overrepresented in environmental justice/frontline communities.

Since UCM students are almost entirely in-state (less than one percent come from out of state or country) and UCM has highest percentage of Pell grants for low-income students in the UC system[11], no other research university in California has this level of per capita representation from environmental justice communities and economic disadvantage. Hence, no other campus counts this level of state-wide geographic reach of environmental justice communities (in per capita terms), with representation from over a thousand different disadvantaged neighborhoods. At the same time, a nearly contiguous chain of frontline environmental justice census tracts (from Stockton to Arvin) surrounds UC Merced. These demographic and geogaphical features constitute UC Merced as an "Environmental Justice University" with nearly a majority of the student body residing in frontline communities. The Maps in Figs. 1 and 2 show the geographical distribution of the home location of the 8300 students down to the census tract level. Not only are there substantial numbers of undergraduates from the SJV, but also from the hundreds of environmental justice communities in greater Los Angeles and the San Francisco Bay Area.

The student body of UC Merced offers a tremendous resource of human and social capital for the University of California system to meet the just transition goals of the Pathways to Fossil Free UC Task Force and the state of California's mandate (SB 535) to invest the state's Greenhouse Gas Reduction Fund (GGRF) in CalEnviroScreen communities in a manner desired by the local residents. UC Merced can serve as a hub for the entire state to meet just transition goals via an alliance of students, faculty, staff, community-based organizations (CBOs), and labor unions, with students serving as just transition ambassadors for their respective environmental justice communities. In the San Joaquin Valley alone, Tables 1 and 2 showed strong support among the university-community to engage in just transition policies.

Specific strategies by UC Merced to extend just transition-type climate civic engagement in the region with widespread backing may include: 1) developing climate action plans with local governments based on equity principles; 2) engaging in workforce development with other educational institutions in the SJV focusing on the renewable energy sector and low-income populations[12,13]; and 3) offering living laboratory climate education opportunities for residents in the SJV via university extension programs with undergraduate students actively involved[3]. In terms of the formal curriculum, several undergraduate and graduate courses are offered across the three schools on campus (Engineering, Natural Sciences, Social Sciences/Humanities) on climate-related issues. Such courses include hydrology and climate, alternative energy, air pollution, soil systems, energy policy, climate change and society, climate weather, climate justice, nature-based solutions, environmental sociology, and climate change science and solutions. An undergraduate certificate program in climate action is also under university review and scheduled to launch in the fall of 2027. Student ambassadors should receive a climate action certification before engaging with local frontline communities on just transition initiatives. Students would receive additional capacity training from the university's community and labor center.

Past studies on university-community partnerships indicate that the launching of a just transition hub ought to move with considerable caution. There is enormous potential for extractive relationships between local communities and research universities[14]. The above proposed Just Transition strategies of climate action planning, workforce development, and living and learning laboratories should be considered with additional community preferences and priorities, or not implemented at all without extensive and representative consultation with local residents[15]. When university actors and surrounding communities develop long-term trust relationships before initiating collaborative projects, it helps ensure "two-way street" type partnerships with mutual benefits[16]. Working with a university community and labor center assists in developing just transition projects from below where working-class and frontline population preferences and needs are prioritized.

UCM has historically suffered from underfunding compared to the other UC campuses and research universities in general[11]. The university was founded in 2005 in the neoliberal era of economic development[17,18], while all other UC campuses were established or greatly expanded in the era of state-led development, whereby they received much more state investment as an integral strategy of national economic growth (e.g., via a state-subsidized educated workforce and support for basic and applied research for technological innovation). Moreover, just three years after opening its doors, UC Merced navigated through the Great Recession (2008–2010), the largest economic downturn since the Great Depression. The Great

Recession, combined with an already weakened state commitment to higher public education in California (e.g., Proposition 13), resulted in woefully underinvesting in the first public research university of the twenty-first century in the United States, with the least economically resourced students in the UC system. The consequences include severe staff shortages, especially within academic units across the campus.

Major investments in UC Merced and community and labor partners in climate action, such as climate action planning and training; green workforce development; land restoration practices; nature-based solutions; sustainable and cooperative-run agriculture; renewable energy; and civic engagement, would make UCM a regional center for just transition implementation. A model that could be emulated across the country and the world for other university-affiliated labor centers.

In summarizing the maps in Figs. 1 and 2, for the CALEnviroscreen census tracts, 3644 UC Merced students live in an environmental justice community represented by 1332 unique disadvantaged census tracts. Hence, there is a UC Merced student in 58% of California's environmental justice communities. This opens a huge potential to launch state climate investments in these frontline regions with a Just Transition Ambassador program[19] led by UC Merced students and participants residing in these same localities. Student ambassadors and their working-class families living in the environmental justice communities serve as trusted messengers, often with bilingual skills to enhance communication and outreach. Institutes already in existence at UC Merced that are committed to a Just Transitions climate action strategy and have a track record of already coordinating with workers and labor federations over health, safety, and workforce development issues, as well as with deep connections to CBOs in frontline communities in capacity building, should be prioritized in leading these efforts. Investing in units and centers without the above deep relationships to surrounding regions and CBOs runs the risk of alienating local residents and intensifying the rift between disinvested populations and universities discussed above.

Moving forward, California climate investments, including UCOP's distribution of state climate funds and the GGRF, should align with the state's climate goals of serving priority populations and ensuring the recipients of grants and funding live in frontline communities and have the capacity to communicate effectively with Enviroscreen-designated communities. Climate investment decision-makers may also want to prioritize funding researchers and principal investigators (PIs) residing in environmental justice communities and with the ability to speak in multiple languages, especially the native language of nearby residents[20]. A recent survey of UCM undergraduate students found that support for *economic equity* was one of the strongest predictors for interest in engaging in climate action and inviting others to climate meetings[21]. This is likely because the UCM students largely come from environmental justice communities, and the lived experience commits one to more of a just transitions perspective. Placing environmental justice communities at the forefront of climate action helps ensure that strategies remain on a just transition trajectory.

In 2023, the Biden Administration EPA and the Department of Energy (DOE) partnered together with universities to establish 18 Thriving Communities Technical Assistance Centers (TCTACs) with an initial investment of $177 million to help communities across the country. The program states: "TCTACs use their extensive networks in nonprofits, tribes, and local governments, respectively, to connect environmental justice organizations with even more opportunities. They plan events and trainings, and find and create resources … that bring environmental justice communities together and elevate their stories."[22] The TCTACs focus on frontline communities and provide grants, technical assistance, and civic engagement along the lines discussed above. With the evidence presented in this article, UC Merced would be a prime candidate to serve as a TCTAC in the western United States once the program renews funding (because of its location, student body, research specializations, and community outreach). Environmental and Economic policy planners and elected officials interested in addressing the climate crisis in an equitable and comprehensive fashion could benefit by focusing on the distribution of the most vulnerable communities and the most effective means to launch transformative programs to reach the largest portion of the public as possible with trusted local messengers and university centers with long-term relationships with local CBOs and labor-based organizations.

As planetary warming continues to pick up pace, along with the increasing frequency of climate disasters, we urgently need to invest public and philanthropic funds in the locations and university-based centers that will generate rapid results in climate solutions that are equitable and not reproduce existing structures of stratification and subordination. Such actions may be our best hope for a civic engagement revolution in just transition planning and implementation.

Data availability

As agreed with the University of California Institutional Review Board (IRB) for this study with human subjects, data is protected, and anonymized files used for the analysis can be made available by contacting the author.

Received: 11 January 2026; Accepted: 26 April 2026;
Published online: 14 May 2026

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Acknowledgements

I wish to thank the UC Merced Office of Sustainability and the UC Merced Decarbonization Committee for their support. The author has no research funding to declare for this article.

Author contributions

P.A. conducted survey design and data collection. He worked on data analysis and writing and performed the literature review.

Competing interests

The author declares no competing interests.

Additional information

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