Innovate UK

Innovate UK
Global Expert Mission Report

Climate Tech California USA 2024

28th October – 1st November 2024

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Executive Summary

The California Global Expert Mission explored opportunities for collaboration between the UK and California in climate technology innovation, specifically in the themes of:

- **AI-driven decision-making tools**
- **Climate risk modelling**
- **Land use and inland use**
- **Nature-based carbon capture and carbon sinks.**

Both regions are leaders in advancing climate solutions, with complementary strengths that can be leveraged to address shared environmental challenges.

California has emerged as a leading hub for climate tech innovation in the United States, with a robust ecosystem built on strong environmental policies, world-class research institutions, and a thriving entrepreneurial culture. The state aims to achieve 100% clean energy by 2045 and reduce greenhouse gas emissions by 45% by 2030, spending over $3 billion annually on clean tech initiatives.[1] California plays a key national role, hosting approximately one-fifth of U.S. climate tech startups and accounting for 46% of total U.S. funding in 2023.[2]

The Global Expert Mission (GEM) highlighted California's particular strengths in addressing specific climate issues like wildfires, groundwater depletion, and drought control, as well as its strength in scaling innovations in areas like AI-driven decision-making tools and carbon markets. California and the UK could collaborate to translate climate learnings through frameworks, policies, standards and open data platforms. However, challenges to collaboration exist, including regulatory differences, market dynamics, and data accessibility. The California GEM took place prior to the change in administration, and although California is a state leader in climate policy, national regulatory changes with the Trump administration could have unforeseen consequences to the climate tech landscape.

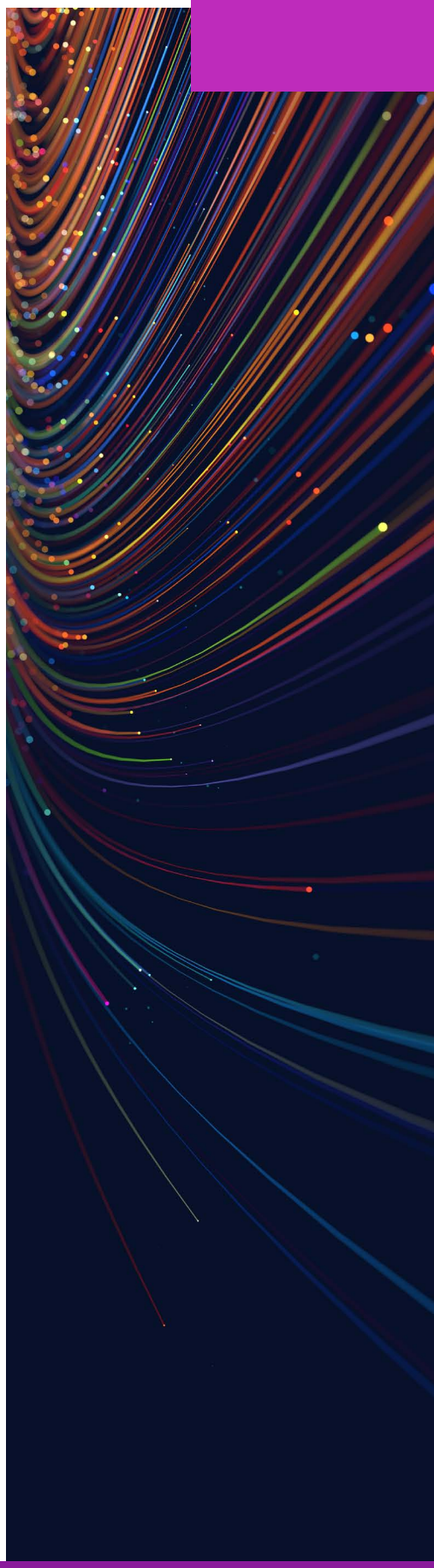
By leveraging their respective strengths, California and the UK can co-develop scalable climate solutions and frameworks that contribute to global decarbonisation goals. The outcomes of this GEM underscore the need for continued engagement, joint investment, and shared innovation to build a sustainable future. These partnerships will not only enhance the competitiveness of both regions but also set a global precedent for collaborative climate action.

1 https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan

2 https://www.powerhouse.fund/climate-geography

Acronyms

AI	Artificial Intelligence
AB	Assembly Bill
B2B	Business to Business
B2C	Business to Consumer
CARB	California Air Resources Board
CPRG	Climate Pollution Reduction Grants
DAC	Direct Air Capture
DBT	Department for Business and Trade
DSIT	Department for Science, Innovation and Technology
EPIC	Electric Program Investment Charge
ERW	Enhanced Rock Weathering
EU	European Union
FCDO	Foreign, Commonwealth and Development Office
GEM	Global Expert Mission
GBIP	Global Business Innovation Programme
GHG	Greenhouse Gas
GIP	Global Incubator Programme
IRA	Inflation Reduction Act
LACI	Los Angeles Cleantech Incubator
PCAP	Priority Climate Action Plan
SB	Senate Bill
SIN	Science and Innovation Network
SGMA	Sustainable Groundwater Management Act
TAM	Total Addressable Market
TEC	Technology Executive Committee
UC	University of California
UKRI	UK Research and Innovation
VC	Venture Capital



Introduction

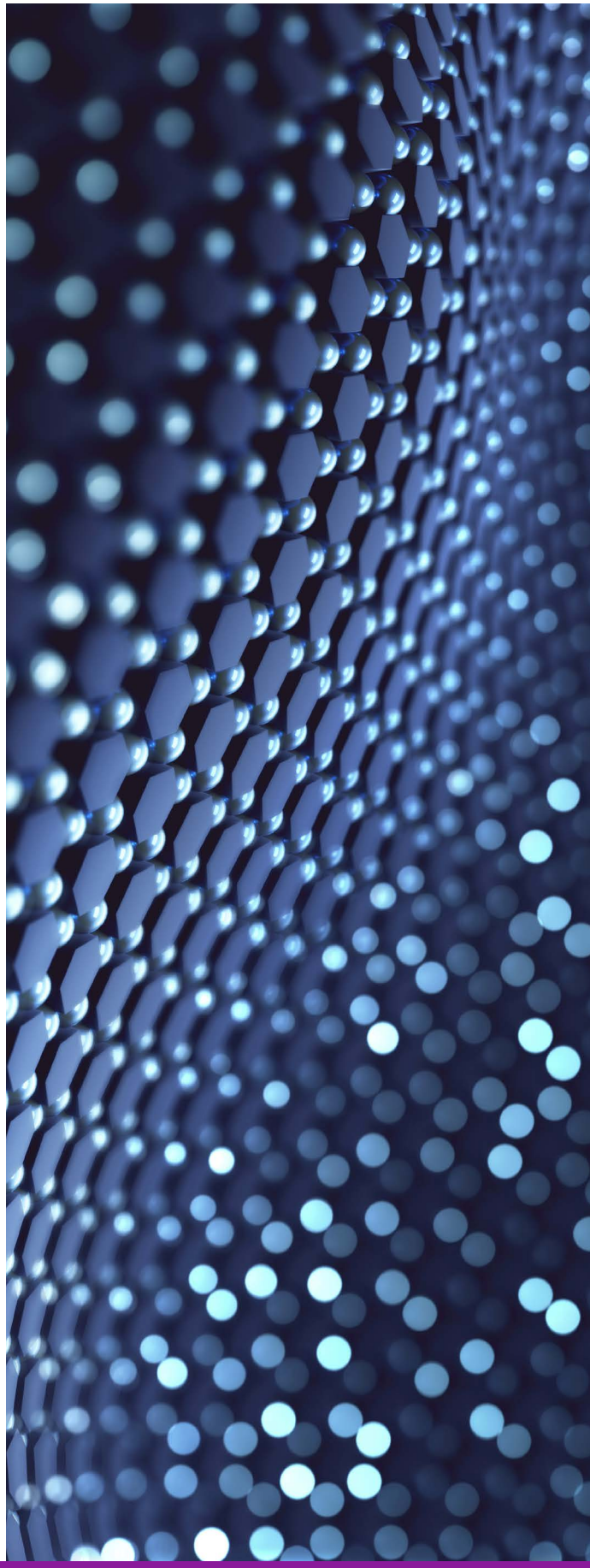
Innovate UK and the Global Expert Missions

Innovate UK supports business-led innovation and is part of UK Research and Innovation (UKRI).[3] UKRI convenes, catalyses and invests in close collaboration with others to build a thriving, inclusive research and innovation system. To this end, Innovate UK helps businesses to identify the commercial potential in new technologies and turn them into new products and services that will generate economic growth and increase productivity. With a strong business focus, Innovate UK drives growth by working with companies to de-risk, enable and support innovation. Innovate UK Business Connect exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions. Innovate UK Business Connect is part of the Innovate UK group.

As innovation is increasingly a global endeavour and the ambition of UK businesses to become truly international enterprises is at its highest, Innovate UK established its Global Expert Mission (GEM)[4] programme in 2017. Delivered by Innovate UK Business Connect, in partnership with the UK Science and Innovation Network (SIN),[5] GEMs help further Innovate UK's global strategy by providing the evidence base for where it should invest and by providing the opportunities for UK businesses to build partnerships and collaborations with key economies.

Built around UK business, policy and research representation, a GEM's objectives are:

1. **Building International Collaborations.** The expert insights will help inform how Innovate UK can best help UK businesses find and exploit opportunities for innovation partnerships. The GEM creates connections with key organisations and people that will deepen and widen the collaboration with the partner country to the benefit of UK business.
2. **Informing UK Businesses and Government.** The mission findings and expert insights resulting from the GEM are made available to UK businesses and government departments. These inform UK businesses and the Government about potential opportunities for innovation in a country of interest and how it can help UK businesses make the most of those opportunities.
3. **Sharing UK Capabilities.** During the Mission visit, the delegation of experts will use the opportunity to share the UK's innovation strengths.



3 https://www.ukri.org

4 https://iuk-business-connect.org.uk/programme/global-expert-missions/

5 https://www.gov.uk/world/organisations/uk-science-and-innovation-network

Mission Overview and Objectives

The UK climate tech market is significant and rapidly growing, reflecting the country's commitment to achieving net-zero emissions by 2050. The climate tech sector in the UK is a major component of the broader clean energy market, which was valued at approximately £28 billion in 2021 and is projected to grow significantly over the next decade. The UK government has committed substantial funding and policy support to drive climate tech innovation. This includes the £1 billion Net Zero Innovation Portfolio, which aims to accelerate the commercialisation of low-carbon technologies.

Innovate UK is pivotal in supporting climate tech innovation through various funding programmes, including the Energy Catalyst, Smart Sustainable Plastic Packaging, and Faraday Battery Challenge. However, further strategic work is needed in Climate Tech to tap into the dynamic market of Climate Tech start-ups.

The UK climate tech market presents substantial investment opportunities, driven by strong government support and a dynamic innovation ecosystem. The GEM looking at California can significantly enhance this potential by fostering international collaborations. This strategic mission aligns with the UK’s net-zero goals and positions UK businesses to thrive in the global climate tech arena.

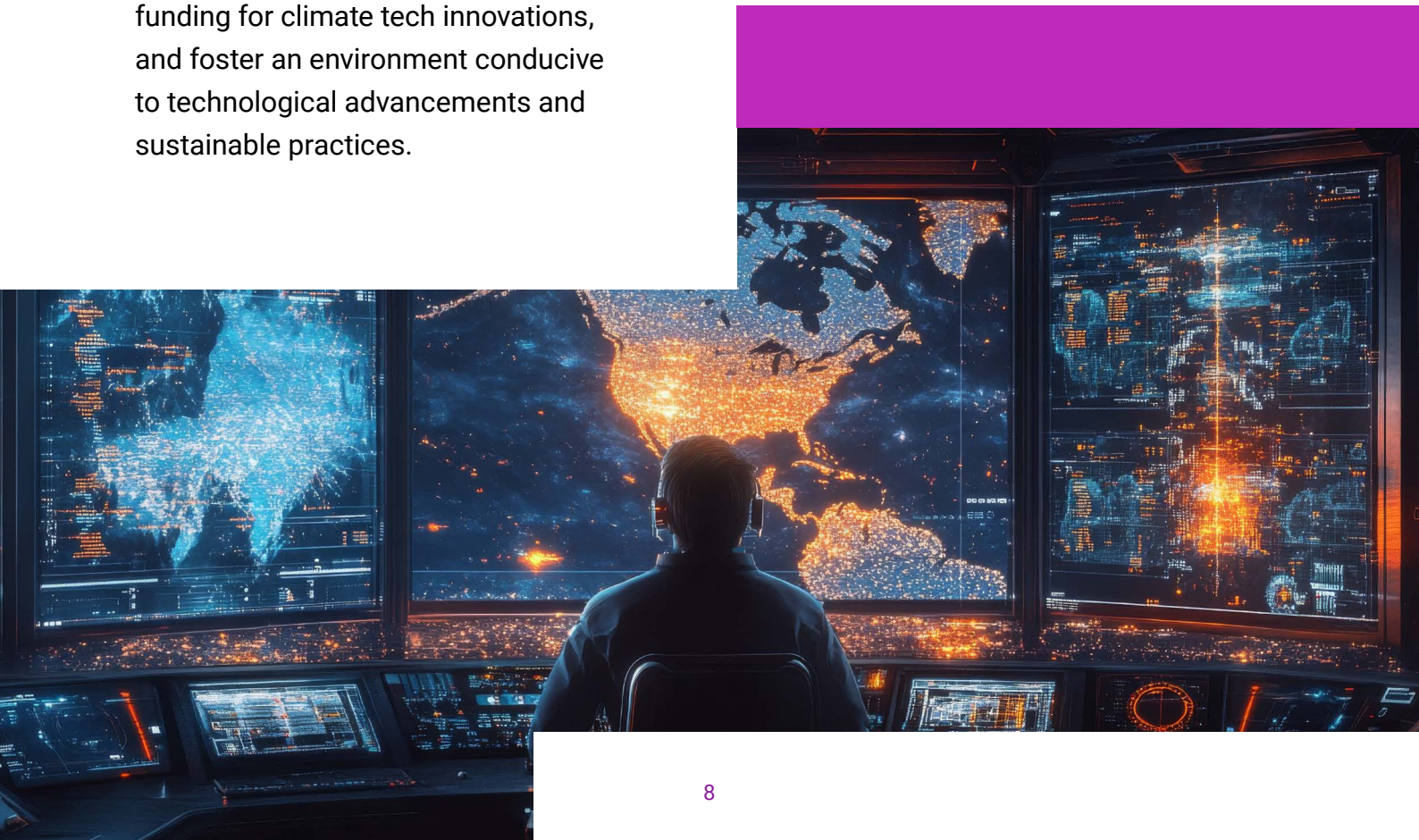
The purpose of the Global Expert Mission was to identify areas and programmes that will enable UK innovators to collaborate more effectively with Californian partners to deepen research and development and innovation collaboration on ClimateTech with a specific focus on products and services. This mission presented an excellent opportunity to exchange knowledge and expertise about the ClimateTech sector in both countries.

The rationale for the mission is as follows:

1. **Shared Capabilities:** Both the UK and California are leaders in climate policy and technology development. They have ambitious climate goals and advanced technological ecosystems, making them natural partners for collaboration in climate tech.
2. **Strategic Importance:** Engaging with California, a hub for innovation and venture capital, can significantly enhance the visibility and attractiveness of UK climate tech companies, leading to increased investment and market opportunities.
3. **Collaborative Projects and Research:** The mission will leverage existing collaborations between UK and Californian academic and research institutions, furthering joint research initiatives, technological development, and policy innovation.
4. **Impact and Outcomes:** This GEM aims to establish long-term partnerships, secure funding for climate tech innovations, and foster an environment conducive to technological advancements and sustainable practices.

The Climate Tech GEM took place in California, USA, alongside the VERGE 2024 conference. The event attracted over 6,000 sustainability experts, with 412 companies displaying cutting-edge ClimateTech innovations. This conference acted as a central point for professionals focused on decarbonisation, enabling the sharing of insights and strategies to enhance climate solutions.

Six UK delegates involved in the Climate Tech sector, along with representatives from Innovate UK, met with key research and industry organisations from the private and public sectors in California. Given the profound effects of climate change on our planet, there is an urgent need to investigate bilateral and multilateral research opportunities to foster stable collaboration between the Climate Tech industries of the UK and California.



Mission Scope

The aim of the GEM was to identify focus areas in terms of technology, sector, location, and the type of programmes required to enhance collaboration between California and the UK. It focused on areas such as AI-driven decision-making tools, climate risk modelling, nature-based carbon capture, carbon sinks, and land use.

To achieve this, we explored the market trends and dynamics within the Californian climate tech sector, the priorities of the Californian government, and how these could align with Innovate UK and wider UK Government priorities. Furthermore, we sought to understand how California emerged as a leader in adopting innovation within the climate tech market. Finally, we identified both challenges and opportunities related to developing innovative technologies, products, and services in the context of collaboration.

The mission was focused on specific technical areas within the defined scope:

- **AI-Driven Decision-Making Tools:** The integration of AI into climate tech is transforming data gathering and analysis, offering companies a competitive edge in developing smarter, more targeted environmental solutions.
- **Climate Risk Modelling:** Using advanced scientific data to project future climate scenarios and their potential impacts, helps organisations prepare for and mitigate climate-related risks.
- **Land Use and Inland Use:** Utilisation and management of terrestrial areas, including agricultural practices, urban development, and conservation efforts, which significantly influence climate change and environmental sustainability.
- **Nature-Based Carbon Capture and Carbon Sinks:** Natural systems or processes that absorb and store more carbon dioxide from the atmosphere than they release, such as forests, oceans, and soil, playing a crucial role in mitigating climate change.

Climate Tech Sector Overview

In 2023, the global Climate Tech market was valued at $20.43 billion and is projected to grow to $149.27 billion by 2032, exhibiting a CAGR of 24.8%.[6]

Regulatory policies worldwide are implementing mandates to limit greenhouse gas emissions. These policies are introducing regulations such as subsidies for clean technologies, renewable energy mandates, and carbon pricing, which are expected to positively influence the growth of the global Climate Tech market.

International agreements, such as the Paris Agreement, seek to reduce carbon emissions significantly and increase demand for Climate Tech solutions.

Additionally, companies' sustainability efforts are anticipated to drive industry growth with many organisations aiming for net zero emissions, further boosting innovation opportunities for around Climate Tech.

In 2024, the Climate Tech sector experienced rapid advancements in AI-driven solutions, sophisticated climate risk modelling, improved land use strategies, and the implementation of nature-inspired carbon capture methods. Countries like the United States, United Kingdom, India, Canada, and Australia are leading these efforts, playing vital roles in the global fight against climate change.

6 https://www.futuremarketinsights.com/reports/climate-tech-market

UK Climate strategy

The UK's primary climate strategy aims to achieve net-zero greenhouse gas emissions by 2050,[7] focusing on decarbonising key sectors like energy, agriculture transport, and industry. The UK's commitment to its climate goals is seen through its investments in climate programmes and grants, such as the £1 billion Net Zero Innovation Portfolio,[8] the Energy Catalyst[9] and the Faraday Battery Challenge.[10]

In 2022/23, Innovate UK awarded 1,043 net-zero related grants and supported 1,746 companies, committing over £720 million to net zero research and innovation projects across the UK.[11] Despite global challenges in investment, with venture and growth investment in 2024 down 14% from 2023,[12] the UK Climate Tech sector has demonstrated its commitment through continued growth in 2024:

- Investment in UK-based Climate Tech companies surged by 24% in 2024, reaching a total of £4.5 billion.[13]
- The UK accounts for 22% of global investment in AI-related Climate Tech start-ups.[14]
- Several new commitments were launched in 2024, including a £22 billion CCUS investment,[15] the National Wealth Fund,[16] Electric Vehicle Charging Infrastructure funding of £200 million,[17] and a £3.4 billion in investment towards heat decarbonisation and home energy efficiency.[18]

The 2024 Climate Change Committee's (CCC) 2024 Annual Progress Report shows that the UK is acting or partially acting on all 35 of the CCC's recommendations to the UK government.[19] It emphasises the integration of advanced technologies, including AI-driven decision-making tools and satellite-based technologies, particularly in sectors like land use and agriculture.

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7 https://www.gov.uk/government/publications/net-zero-strategy

8 https://www.gov.uk/government/collections/net-zero-innovation-portfolio

9 https://energycatalyst.ukri.org/

10 https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/faraday-battery-challenge/

11 https://www.ukri.org/wp-content/uploads/2023/11/IUK-141123-ScalingClimateTechnologyNetZeroReview2023.pdf

12 https://www.ctvc.co/30bn-and-14-fall-as-market-finds-new-normal-in-24/

13 https://www.pwc.co.uk/press-room/press-releases/research-commentary/2024/uk-climate-tech-investment-surges-almost-25---with-ai-powered-so.html

14 https://www.pwc.co.uk/press-room/press-releases/research-commentary/2024/uk-climate-tech-investment-surges-almost-25---with-ai-powered-so.html

15 https://www.gov.uk/government/news/government-reignites-industrial-heartlands-10-days-out-from-the-international-investment-summit

16 https://www.gov.uk/government/publications/national-wealth-fund-mobilising-private-investment/national-wealth-fund-mobilising-private-investment-accessible

17 https://www.current-news.co.uk/autumn-budget-2024-green-hydrogen-gb-energy-and-ev-incentives/

18 https://www.insidehousing.co.uk/news/autumn-budget-2024-1bn-announced-for-cladding-remediation-and-34bn-for-warm-homes-plan-89093

19 https://www.gov.uk/government/publications/committee-on-climate-change-2024-progress-report-government-response?utm_source=chatgpt.com

California Market Overview

With approximately 39.1 million residents, California accounts for about 11% of the US population.[20] California has emerged as a leading hub for Climate Tech innovation, with the state's policies and innovations often setting precedents that influence both national and international climate action. A 2024 report for 2022 greenhouse gas emissions in California shows that between 2000 and 2022, emissions in California fell by 20% while California's gross domestic product increased by 78%, pointing to the effectiveness of the state's climate change and air quality programmes (Figure 1).[21]

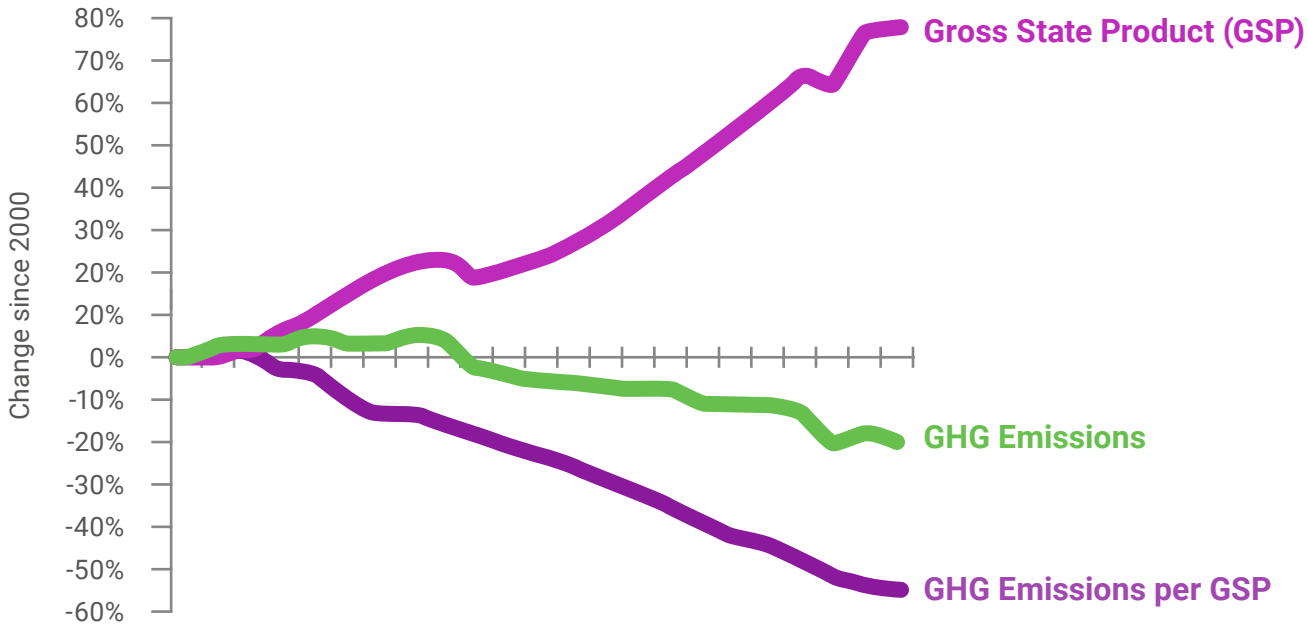


Figure 1

California has the largest economy and population in the US, ranks first for startups and VC investments in the country, and boasts the top position for cleantech innovation. It is estimated that over 1,600 climate tech startups are based in California, a disproportionately high number compared to the rest of the US.[22]

20 https://www.gov.ca.gov/2024/04/30/californias-population-is-increasing/

21 https://ww2.arb.ca.gov/news/california-greenhouse-gas-emissions-decline-across-most-sectors

22 https://www.powerhouse.fund/climate-geography

Temperature change in San Francisco

Relative to average of 1961 – 2010 [°C]

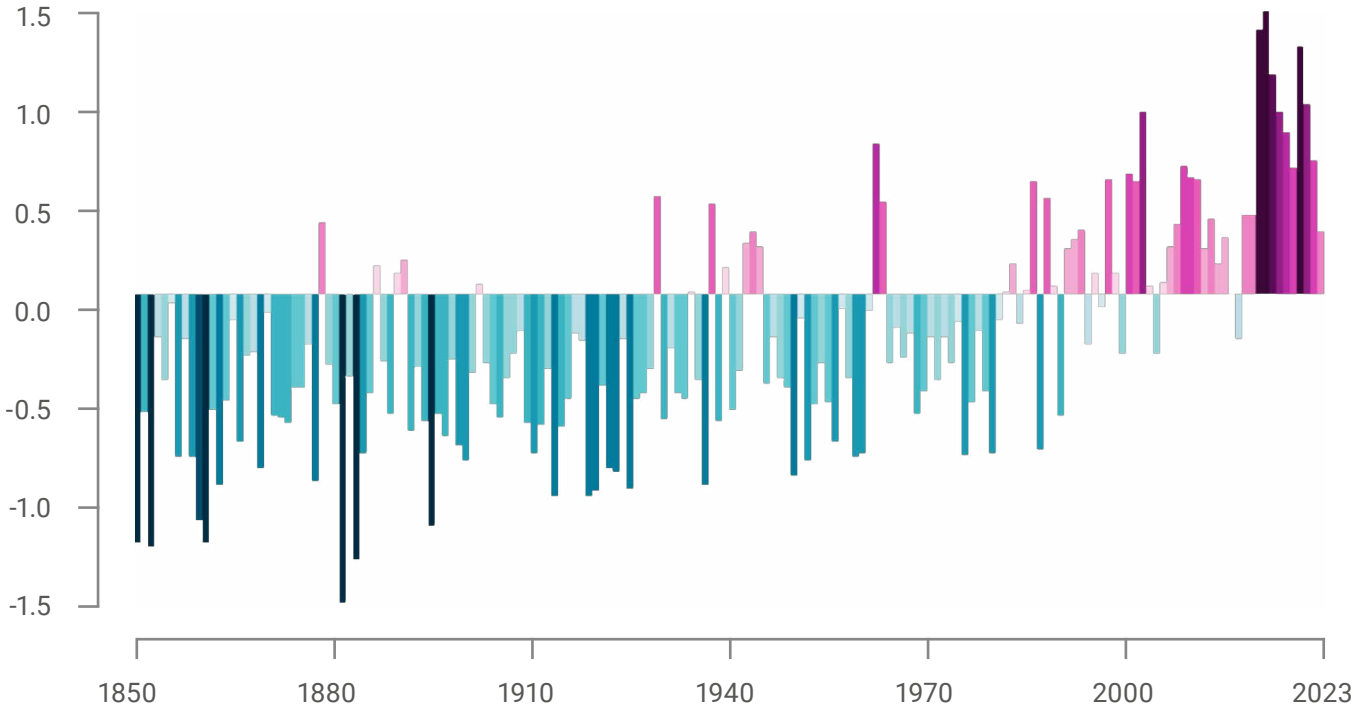


Figure 2: Temperature change in San Francisco since 1850 to 2023.[23]

The state aims to achieve 100% clean energy by 2045, with a 45% reduction in greenhouse gas emissions by 2030, and spends over $3 billion annually to support clean tech initiatives.[24]

California is of strategic importance for agriculture, with 10 million irrigated acres producing a quarter of the nation's food. Advancements in Climate Tech are vital for addressing California's climate-related challenges, including increasing threats from wildfires, droughts, and floods.

Nationwide initiatives, like the one IRA passed in 2022,[25] has boosted California's Climate Tech sector, with long-term tax incentives driving over $225 billion in clean energy investments and increasing interest in Climate Tech sectors like CCUS and AI-driven tools. The US' approach to long-term investment with programmes like the IRA support later-stage development and scaling.

California's Climate Tech sector is poised for continued growth, driven by a combination of innovative startups, supportive policies, and increasing market demand for climate solutions.

23 Ed Hawkins, National Centre for Atmospheric Science, University of Reading., National Centre for Atmospheric Science, UoR, #ShowYourStripes, @UniofReading

24 https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/213_AWP_final.pdf

25 https://www.congress.gov/bill/117th-congress/house-bill/5376

Population

39.1 million

California is the most populous U.S. state, leading in innovation and sustainability.

2024 estimate

Economy

California remains the 5th largest economy in the world since 2017.

In 2023, California's GDP was about $3.9 trillion, comprising

14% of national GDP

($27.7 trillion)

California produces 9% of the nation's international exports of goods ($179 billion in 2023) and 20% of its exports of services (also $179 billion in 2022). It exports 17% of US agricultural products and 18% of computer and electronic products.

Greenhouse Gas Emissions

Reduction in emissions

Since 2005

20%

decrease (2024)

Government Investment in R&D for Climate Tech

California invested

$2.5 billion

in climate tech R&D in 2024 and is proposing

$2.7 billion

in 2025

Climate Tech Startup Landscape

California's Share of Climate Tech Startups

Approximately

20%

of U.S. climate tech startups

Number of Entrepeneurs

California has approximately

3.9 million

entrepeneurs

representing a significant portion of the U.S. entrepreneurial landscape.

California's Innovation Landscape

California Climate Tech Strategy

While California-specific data is limited, the state plays a significant role in this market. California is home to approximately one-fifth of Climate Tech startups in the U.S., with 1,607 Climate Tech startups recorded in recent data.[26] The state has 41 Climate Tech startups per million inhabitants, indicating a high concentration of innovation. California dominated the Climate Tech funding landscape in 2023, accounting for 46% of total funding in the U.S.

Regulatory Environment

California's regulatory framework actively promotes Climate Tech innovation through its ambitious climate objectives, forward-thinking policies, and strong dedication to environmental sustainability. Some examples of California's initiatives are:

- The Climate Corporate Data Accountability Act (SB 253) and the Climate-Related Financial Risk Act (SB 261) mandate greenhouse gas emissions reporting and climate risk disclosures for large companies doing business in California, to take effect in 2026.[27]
- The California Cap-and Trade Programme, launched in 2013, covers 75% of California's GHG emissions, sets a declining cap on emissions and allows entities to trade allowances, creating a market-based approach to incentivise emissions reductions.[28]
- The California Air Resources Board (CARB) has until July 1, 2025, to adopt regulations for Scopes 1, 2, and 3 GHG emissions reporting, which is likely to further stimulate the Climate Tech sector.
- AB 1305, the Voluntary Carbon Market Disclosure Act, regulates carbon offset marketing and claims, potentially boosting demand for verified carbon capture technologies.[29]

However, the same opportunities highlighted that make this an attractive sector for the US-UK collaboration, could pose barriers to entry that need to be monitored and mitigated:

- **Regulatory Uncertainty:** Despite California leading the way in regulation for the US, the 2024 election results do cause uncertainty. That said, Governor Newsom of California has called in a special session of Legislature to protect California's environmental laws prior to the transfer of power.
- **Market Competition:** California's Climate Tech sector is already well-established, with approximately one-fifth of US Climate Tech start-ups calling it home. The high concentration of existing players can make it difficult for new entrants to gain market share and attract funding.
- **Funding Challenges:** Recent trends in US funding may pose challenges, as Climate Tech funding hit a 4-year low in Q3 2024, with global funding totalling only $4.8 billion.[30] The decline in financial backing comes despite growing urgency around climate action. High interest rates and economic uncertainties have impacted investors' willingness to fund high-risk projects typical in Climate Tech.[31] Additionally, about 60% of Climate Tech companies have less than 12 months of cash runway,[32] which could make it difficult for new entrants to secure necessary funding.

26 https://www.powerhouse.fund/climate-geography

27 https://www.grantthornton.com/insights/articles/audit/2023/snapshot/october/california-climate-reporting-bills

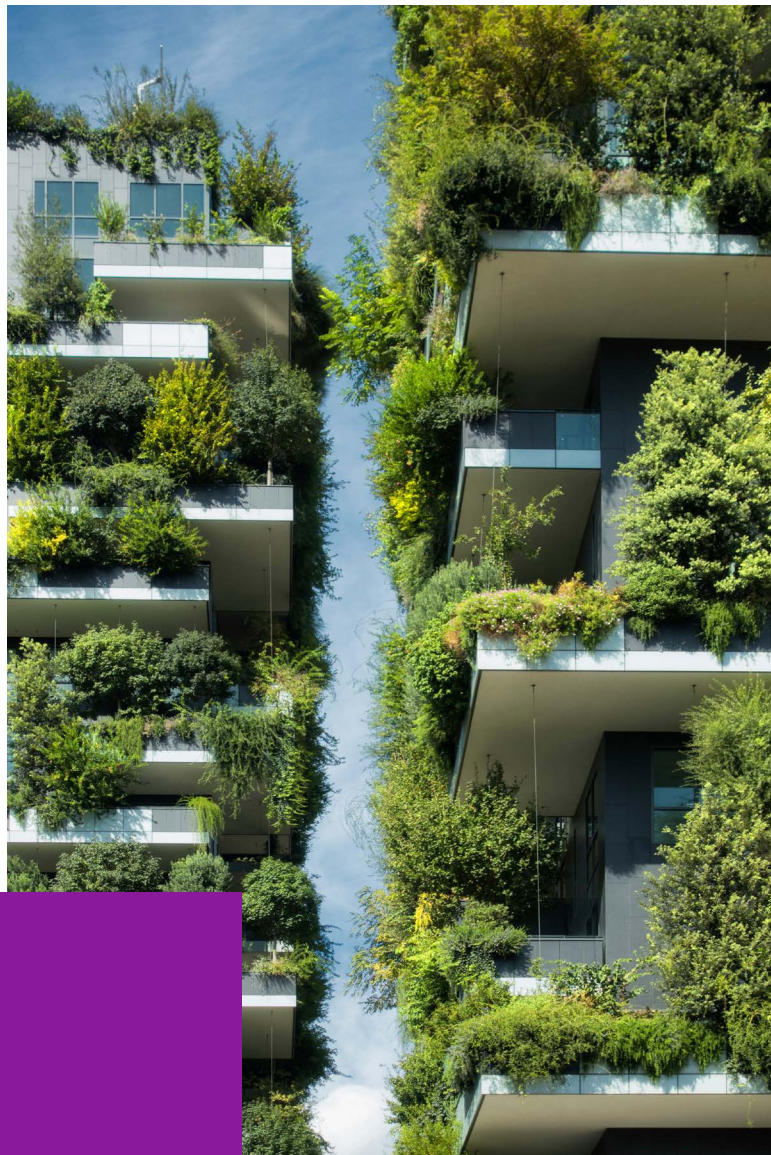
28 https://www.resources.org/common-resources/california-cap-and-trade-explained/

29 https://www.stblaw.com/about-us/publications/view/2024/10/29/voluntary-carbon-market-disclosure-requirements-are-coming-what-companies-need-to-know-about-california-s-ab-1305

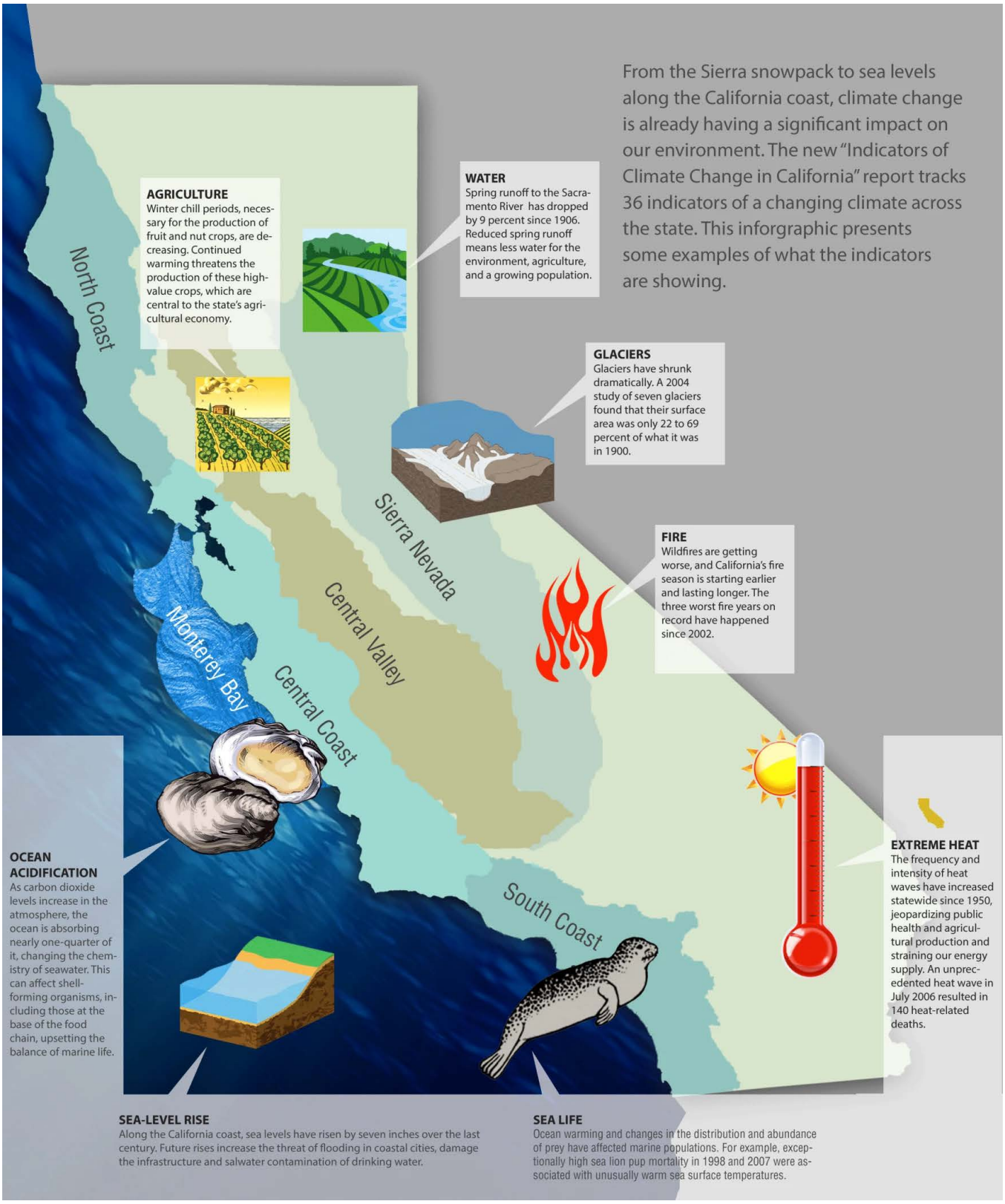
30 https://www.cbinsights.com/research/report/climate-tech-trends-q3-2024/

31 https://www.cityam.com/it-aint-easy-being-green-climate-tech-funding-plunges-as-interest-rates-rattle-investors/

32 https://www.svb.com/trends-insights/reports/future-of-climate-tech/



Impact of Climate Change in California



Source: https://www.kvcrnews.org/drought-and-water-issues/2015-08-21/global-climate-change-may-be-intensifying-california-drought

Innovation Support

California's Climate Tech innovation landscape is characterised by a robust ecosystem of support mechanisms, policies, and key players that drive progress in addressing climate change challenges. This ecosystem is built on a foundation of strong environmental policies, world-class research institutions, and a thriving entrepreneurial culture.

The state's commitment to Climate Tech is reflected in its substantial funding initiatives, such as the California Energy Commission's Electric Programme Investment Charge (EPIC) programme and the California Climate Investments programme. The state's world-renowned universities and research institutions, including the University of California system, Stanford University, and Lawrence Berkeley National Laboratory, form the backbone of its Climate Tech innovation, conducting cutting-edge research and supporting climate programmes.

Additionally, California's venture capital ecosystem, particularly in Silicon Valley, plays a crucial role in funding Climate Tech startups. California boasts numerous innovation hubs and accelerators focused on Climate Tech, such as the Los Angeles Cleantech Incubator (LACI), Cyclotron Road, and the California Clean Energy Fund (CalCEF). These organisations provide crucial support, mentorship, and networking opportunities for Climate Tech startups. Major corporations headquartered in California, such as Apple, Google, and Tesla, have also made significant commitments to sustainability and clean energy, further driving innovation.

California Climate Policies

California has established itself as a leader in climate policy, setting ambitious targets that often exceed federal standards. Key policies include the Global Warming Solutions Act (AB 32),[33] the 100 Percent Clean Energy Act (SB 100),[34] and the Low Carbon Fuel Standard.[35]

Legislative frameworks such as SB 253 and SB 261 require companies to disclose greenhouse gas emissions and climate-related financial risks, encouraging the development of technologies that address these needs.[36] Similarly, the Sustainable Groundwater Management Act (SGMA) has spurred innovation in water conservation technologies,[37] while AB 1305 promotes transparency in carbon offset markets.[38]

The Priority Climate Action Plan (PCAP) for California, developed under the U.S. Environmental Protection Agency's Climate Pollution Reduction Grants (CPRG) Programme, serves as a high-level roadmap for reducing GHG emissions across various sectors of the economy.[39] This plan builds upon California's decade-long climate leadership and aligns with the state's ambitious goals, including achieving carbon neutrality by 2045 and reducing statewide anthropogenic GHG emissions by at least 85% below 1990 levels by the same year.[40]

33 https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006

34 https://www.energy.ca.gov/sb100

35 https://afdc.energy.gov/laws/6308

36 https://page.bsigroup.com/CaliforniaSB253andSB261

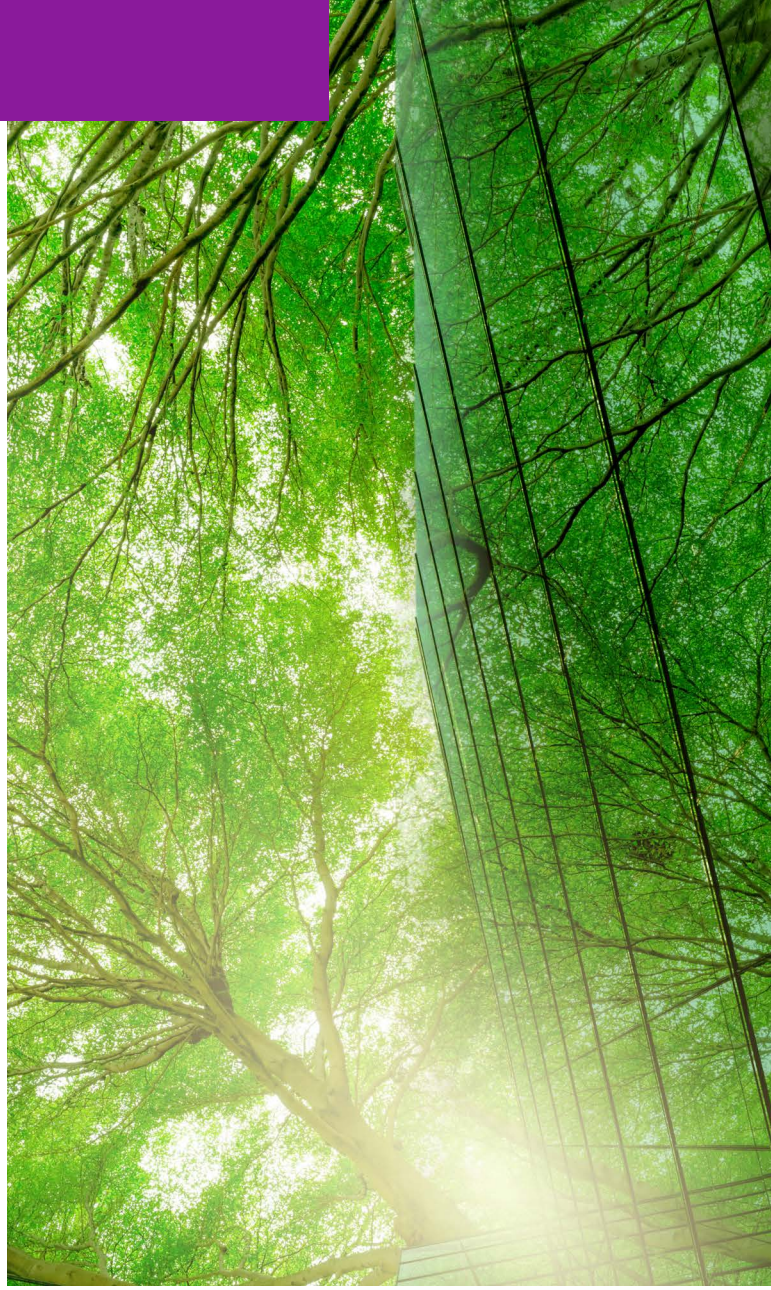
37 https://water.ca.gov/programmes/groundwater-management/sgma-groundwater-management

38 https://leginfo.legislature.ca.gov/faces/billCompareClient.xhtml?bill_id=202320240AB1305&showamends=false

39 https://ww2.arb.ca.gov/our-work/programmes/u-s-epas-climate-pollution-reduction-grants-programme

40 https://ww2.arb.ca.gov/sites/default/files/2024-01/California%20Draft%20CPRG%20Priority%20Climate%20Action%20Plan%20as%20of%20January%2031%202024.pdf

International Cooperation



California has established itself as a leader in international climate collaborations, leveraging its economic power and innovative policies to drive global action on climate change.

Its leadership stems from a commitment to ambitious climate goals, innovation in clean technologies, and a proactive approach to forging international partnerships.

California is actively collaborating with states, provinces, and cities worldwide to address climate change outside of national frameworks. Here are some examples of international Partnerships and alliances:

EU–California Carbon Market Cooperation

In 2018, the European Union and California agreed to strengthen bilateral cooperation on carbon markets.[41] Key aspects of this collaboration include:

- Exchanging information on principles for carbon market alignment
- Addressing economic competitiveness concerns
- Maximising public benefits from programme revenues
- Working through the Florence Process to engage other jurisdictions like China, Canada, and New Zealand.

Under2 Coalition

California played a founding role in the Under2 Coalition,[42] an international network of sub-national governments committed to ambitious climate action. Over 220 governments representing 1.3 billion people and 43% of the global economy made the commitment to reduce emissions by 80-95% below 1990 levels by 2050 and to share best practices and foster collaboration among members.

California-China Climate Partnership

California has established a strong climate alliance with China since 2017, forming the California-China Clean Technology Partnership.[43] This initiative is focused on fostering innovation and commercialisation in areas such as carbon capture and storage, renewable energy, and advanced information technology, which have the potential to greatly lower greenhouse gas emissions.

Blue Lake Rancheria Tribe's International Recognition

While not a direct state-level collaboration, the Blue Lake Rancheria Tribe's climate initiatives in California was recognised as a 2015-2016 "Climate Action Champion" by the U.S. Department of Energy for their implementation of innovative microgrid technology for energy resilience and for sharing of best practices and knowledge with other indigenous communities globally.[44]

California-Mexico Climate Change Partnership

California has established a climate partnership with Mexico,[45] focusing on collaborative initiatives to reduce greenhouse gas emissions, and joint efforts in advancing clean energy and improving air quality. This partnership underscores California's dedication to collaborating with neighbouring countries on climate challenges and sharing effective strategies in climate policy and technology.

These case studies illustrate California's multifaceted approach to international climate collaboration, spanning formal agreements with the EU, leadership in global coalitions, bilateral partnerships with major economies, and support for local initiatives with global resonance.

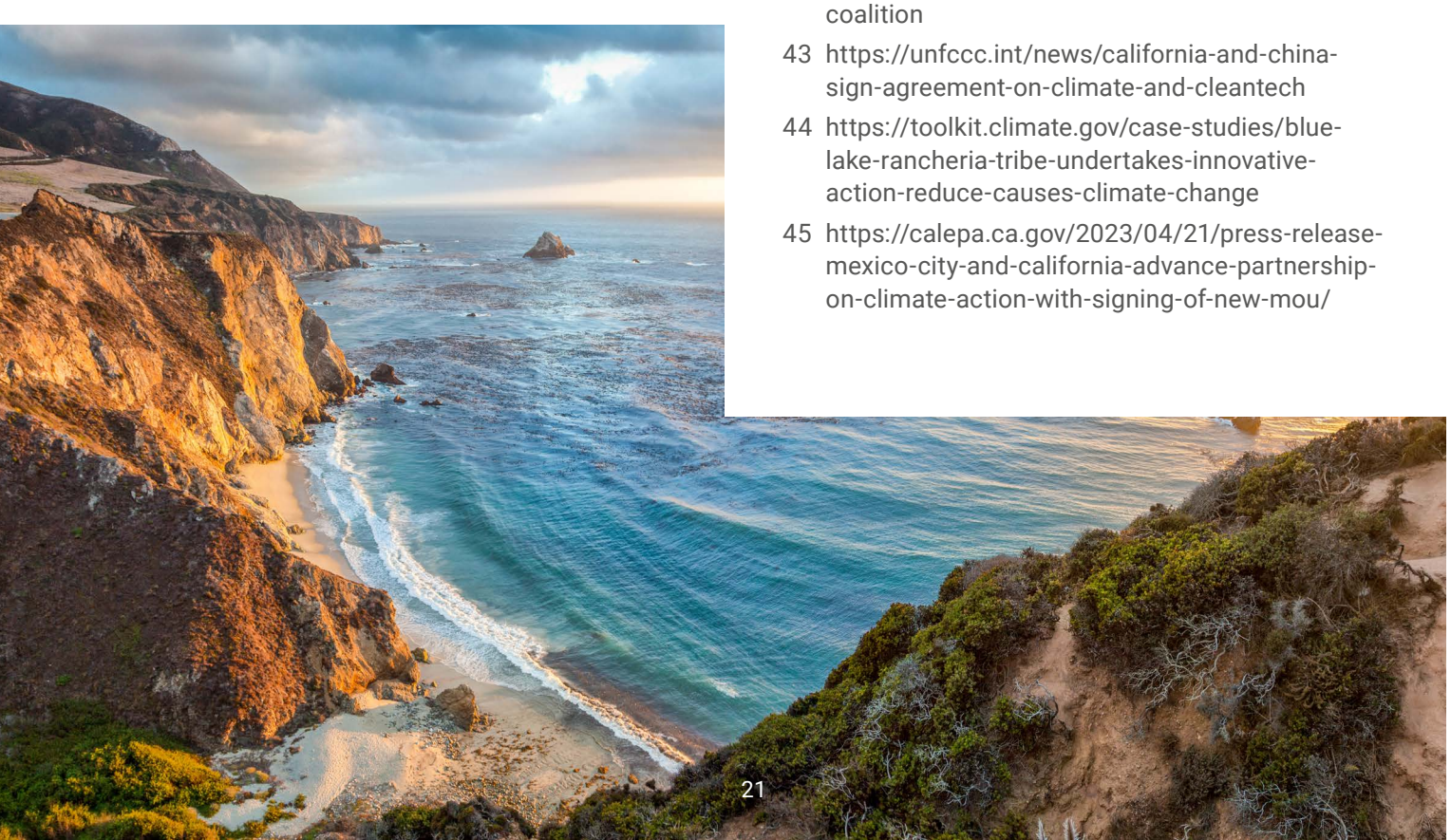
41 https://www.enerdata.net/publications/daily-energy-news/california-us-and-european-union-strengthen-carbon-market-cooperation.html

42 https://www.theclimategroup.org/under2-coalition

43 https://unfccc.int/news/california-and-china-sign-agreement-on-climate-and-cleantech

44 https://toolkit.climate.gov/case-studies/blue-lake-rancheria-tribe-undertakes-innovative-action-reduce-causes-climate-change

45 https://calepa.ca.gov/2023/04/21/press-release-mexico-city-and-california-advance-partnership-on-climate-action-with-signing-of-new-mou/



Carbon Credit

The carbon credit market is a mechanism designed to reduce greenhouse gas (GHG) emissions by placing an economic value on emissions. It operates through two main systems: Cap-and-Trade, where governments set a cap on the total emissions allowed. Companies are allocated or can buy emission allowances. If a company emits less than its allowance, it can sell its excess credits to others; and Voluntary Carbon Markets (VCM): companies or individuals purchase carbon credits to offset their emissions voluntarily. These credits often come from projects like reforestation, renewable energy, or methane capture.

Carbon credits can be seen as a positive solution to help resolve climate challenges. It can create economic incentives that encourage industries to innovate and reduce emissions cost-effectively, but also provide funding for profitable projects like reforestation or renewable energy. Additionally, it can enhance global cooperation as it promotes international collaboration in addressing climate change through credit trading, and improve private sector engagement as companies are motivated to reduce their carbon footprint by offering financial benefits for being environmentally responsible. Finally, carbon credits can support scalable solutions via large-scale investment in climate-friendly technologies and projects.

However, carbon credits raise some serious concerns, especially around greenwashing, as there is a risk that companies may use credits as a way to appear sustainable without making meaningful internal changes. There is also some question surrounding the integrity of the market, as some projects generating carbon credits (e.g., avoided deforestation) may not result in genuine emission reductions. Moreover, there are strong disparities in implementation as developing countries may face challenges in accessing these markets fairly. Finally, there is concern regarding market manipulation, as a lack of robust oversight can lead to fraudulent claims and inflated credit values.

Recently, governments at COP29 have approved new UN standards for international carbon markets, marking progress in operationalising Article 6 of the Paris Agreement,[46] which aims to:

- **Standardised Rules:** Provide a harmonised framework for trading carbon credits globally, reducing discrepancies.
- **Enhance Transparency:** Ensure robust accounting to prevent double-counting of emissions reductions.
- **Boost Credibility:** Support projects that genuinely contribute to climate mitigation.

The UN-backed system, as discussed at COP29, is expected to address current concerns in voluntary carbon markets by enforcing stricter criteria for credit generation and trading[47],[48]. But it could also incentivise significant emissions cuts worldwide, facilitate the transfer of funds and technologies to where they are most needed and provide financial mechanisms for underfunded areas like renewable energy and ecosystem restoration.

The carbon credit market, particularly supported by a UN framework, could significantly contribute to climate change mitigation. However, it is not a complete solution on its own. It should be integrated into a more comprehensive strategy that involves direct emissions cuts, policy reforms, and global collaboration. The success of the framework established at COP29 relies on its ability to maintain environmental integrity, prevent greenwashing, and promote just climate solutions.

A good carbon credit is hard to find

Global 2023 price of carbon credits by category (USD/tCO_2)

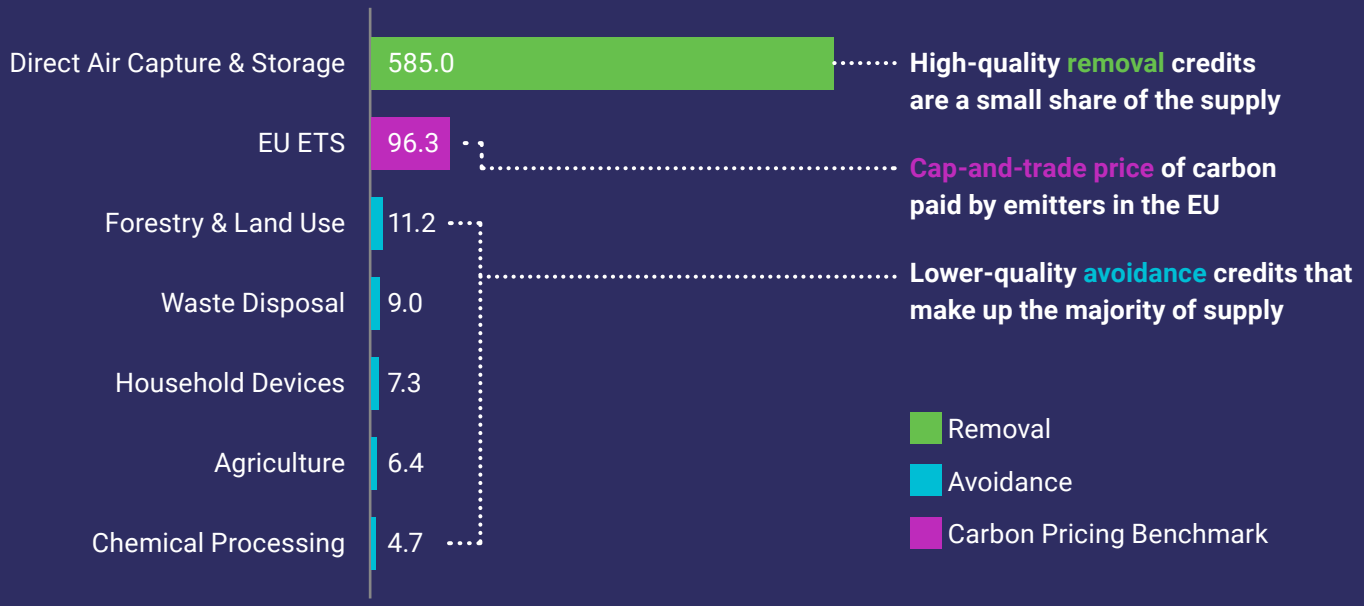


Figure 3: Global 2023 price of carbon Credits by category (USD/tCO2).[49] The prices for voluntary avoidance credits are annual averages, while the price of removal credits is based on an estimated range.

46 https://unfccc.int/process-and-meetings/the-paris-agreement/article-64-mechanism

47 https://www.jdsupra.com/legalnews/cop29-pathway-to-a-global-carbon-market-3002689/

48 https://www.consilium.europa.eu/en/press/press-releases/2024/11/19/council-greenlights-eu-certification-framework-for-permanent-carbon-removals-carbon-farming-and-carbon-storage-in-products/

49 Source: World Bank, Ecosystem Marketplace, IEA, PitchBook Data, Inc. and SVB analysis, https://www.svb.com/globalassets/trendsandinsights/reports/future-of-climate/2024/the-future-of-climate-tech-2024.pdf

AI for ecological disaster and crime management

Artificial Intelligence (AI) and satellite data are pivotal in combating ecological crimes in California by enhancing monitoring, detection, and enforcement capabilities.

High-resolution satellite images provide comprehensive coverage of vast areas, enabling the identification of illegal activities such as unauthorised land clearing, illegal mining, and deforestation. For instance, AI algorithms can analyse these images to detect anomalies indicative of ecological crimes.

Additionally, AI processes of satellite data can identify patterns and anomalies, facilitating the detection of illegal activities. This includes monitoring changes in land use, vegetation cover, and water bodies, which can indicate unauthorised activities.

This continuous satellite monitoring allows for real-time detection of ecological crimes, enabling prompt responses and enforcement actions. This is particularly crucial in remote or difficult-to-access areas.

Finally, combining satellite data with other sources, such as ground reports and environmental sensors, provides a comprehensive view of ecological health, aiding in compliance monitoring and law enforcement.[50]

CASITA Project – How leveraging satellite technology and AI can help environmental monitoring and compliance in California.

The California Satellite Imagery and Technology Advancement (CASITA) project is an initiative to leverage satellite technology and AI to enhance environmental monitoring and compliance, especially in wildfire management in California. By integrating advanced satellite imagery with AI analytics, CASITA provides real-time monitoring and predictive modelling of environmental changes. This enables more effective detection of ecological crimes, improved resource management, and better-informed decision-making. The project represents a collaborative effort between state agencies, technology companies, and research institutions to develop innovative solutions for environmental protection and compliance.

Integrating AI and satellite data significantly enhances California's ability to manage wildfires through improved detection, prediction, and recovery processes. Initiatives like the CASITA project exemplify the state's commitment to using advanced technologies for effective wildfire management.[51]

50 https://iucn.org/news/environmental-law/202104/earth-observation-data-environmental-law-compliance-monitoring

51 https://docs.google.com/presentation/d/1LuyC9pI-zEMdueGSik2YghigAb33d6wQcUairY8rdcA/edit?pli=1#slide=id.p

Stakeholders Engagement

During the California GEM week, the delegation had the privilege of meeting with leading innovators and researchers in Climate Tech. These stakeholders were carefully chosen for their forward-looking innovations in the space and potential international collaboration. Their expertise spanned various areas in climate resilience, land use technologies, nature-based solutions, and AI-driven technologies.

The delegation participated in in-depth discussions, delving into emerging trends and groundbreaking technologies shaping the industry. They also observed some of these advancements firsthand through company and lab visits.

Additionally, The British Consul[52] hosted a roundtable discussion with California officials and prominent AI-driven climate start-ups to better understand innovative solutions and the potential for collaborations. The roundtable covered various topics, including San Francisco's continued commitment to revitalising its city town centre post-covid, with a sustainable focus, the energy usage behind AI, the importance of accurate and open data, and the legal challenges for UK start-ups.

Key organisations from California engaged during the week, including those highlighted in the following six pages.

52 https://www.gov.uk/world/organisations/british-consulate-general-san-francisco

Universities and Institutes

UC Davis

University of California Davis[53] is a global leader in Climate Tech, known for its pioneering research, interdisciplinary collaboration, and impactful innovations addressing climate change.

The university's programmes span diverse fields, including agriculture, engineering, environmental science, and public policy, making it uniquely positioned to tackle complex challenges like sustainable energy, climate adaptation, and ecosystem resilience. UC Davis plays a critical role in developing scalable solutions and fostering industry-academic partnerships that drive Climate Tech forward. We meet with various departments, each providing its own unique insights to California's climate space.

- **Climate Adaptation Research Center, CITRIS and the Banatao Institute**
  The Center's projects span climate issues tackling the interconnected challenges of wildfires, air quality, climate mitigation and adaptation.[54] The institutes work on diverse and distinct climate issues, translating climate threats into human-centric points, such as mortality linked to indoor air pollution, and promotes the importance of ensuring communities target evolving threats effectively.

- **Department of Land, Water and Air Resources**
  UC Davis's initiatives, including the Healthy Soils Programme[55] and partnerships with commodity boards, reflect efforts to promote sustainable and regenerative agricultural practices. Innovative practices and techniques, such as micro-irrigation, demonstrated a 30% yield increase, but significantly increased water usage with productivity. Solar panel advancements enabling light penetration for dual-use with crops exemplify innovation to address resource scarcity.

  Industry collaborations and grants continue to support farmers in adopting sustainable approaches, including the use of anaerobic digesters. Efforts to integrate climate intelligence tools, such as crop selection apps, and restorative techniques, emphasise the need for market-driven solutions for resilience.

- **Institute of the Environment and California Collaborative for Natural Climate Change Solutions**
  The UC Davis 'Institute of the Environment'[56] aims to 'Foster & synergize interdisciplinary efforts to advance climate mitigation & adaptation & build resilience'. The Institute is focused on nature-based solutions, revolving around 6 pillars: Managing water, Sequestering carbon, Fire climate and resilience, Health impacts of climate change, Transitioning energy and Conservation informatics.

- **School of Law**
  California has taken a leading role in climate adaptation, emissions regulation, and water governance, often setting independent standards beyond federal requirements.[57]

Bodega Marine Lab

The Bodega Marine Laboratory (BML) is a renowned research and education facility located in Bodega Bay, California, affiliated with the University of California, Davis.[58] Established in 1976, BML oversees the Bodega Marine Reserve, a 362-acre protected area with diverse habitats such as rocky intertidal zones, sandy beaches, and salt marshes. This reserve plays a critical role in supporting ongoing research and monitoring programmes related to marine life and coastal ecosystems. The Bodega Marine Lab conducts critical climate research on marine ecosystems, including kelp forests, ocean acidification, hypoxia, sea-level rise, estuary resilience, pollution and climate adaptation. The lab supports both academic and industry partnerships and is committed to advancing climate resilience through research, education, and community engagement.

53 https://www.ucdavis.edu/
54 https://citris-uc.org/
55 https://www.cdfa.ca.gov/oefi/healthysoils/
56 https://environment.ucdavis.edu/
57 https://law.ucdavis.edu/academics/centers/environmental
58 https://marinescience.ucdavis.edu/bml/about

Climate Tech Companies

AirCapture

AirCapture[59] is a California-based start-up specialising in direct air capture (DAC) technology to remove carbon dioxide from the atmosphere. By integrating innovative solutions with scalable systems, AirCapture aims to support global efforts in achieving carbon neutrality and addressing climate change challenges.

Taro AI

TARO AI is a company that leverages artificial intelligence to map and monitor trees and infrastructure.[60] Their platform uses AI and automated imagery to alert arborists, property managers, and city staff to potential issues, which helps lower maintenance costs and increase public safety. By providing automatically updated data, TARO AI assists with daily operations and long-term planning.

Boomitra

Boomitra is an innovative California-based agritech startup focused on leveraging technology to combat climate change by enhancing soil carbon sequestration.[61] The Earthshot prize company operates an international marketplace where farmers are incentivised to adopt regenerative agricultural practices, such as minimal tilling and cover cropping, to capture carbon in the soil. By using satellite technology and AI, Boomitra monitors the increased carbon levels, which are then verified and converted into carbon removal credits that can be purchased by organisations seeking to offset their emissions. Boomitra aims to unlock a cost-effective solution to reduce atmospheric CO_2 while boosting farmers' income.

Planet Labs

Planet Labs, founded in 2010 and headquartered in San Francisco, is a pioneering company in Earth observation, specialising in providing high-frequency satellite imagery.[62] The company operates a constellation of small satellites, enabling daily monitoring of the planet's surface for industries ranging from agriculture and energy to government and defence. Planet Labs' platform offers detailed data and analytics tools, helping users track environmental changes, assess risks, and make informed decisions based on real-time Earth observations. The company has over 200 satellites providing 36 terabytes of data a day.

Scout AI

Scout AI is an agricultural technology company focused on providing advanced AI-driven solutions for the vineyard industry.[63] Based in Napa, California, Scout leverages machine learning and remote sensing to gather detailed data about vineyard conditions, after taking a detailed map of the vineyard through basic video. This helps vineyard managers optimise their operations, improve crop yields, and address challenges like water use, pest management, and climate variability.

Aire Labs

Aire Labs is a company that develops climate intelligence tools aimed at accelerating a climate-positive economy.[64] Their tools help in carbon removal and mitigation projects by developing custom models, machine-learning workflows, and geospatial awareness visualisations. This enables clients to reduce their carbon footprints and transition to clean energy.

Conservation Metrics

Conservation Metrics is a company based in Santa Cruz, California. They specialise in wildlife monitoring technology and data analysis.[65] By combining remote sensing, statistical rigor, and scientific expertise, they provide automated alternatives to labor-intensive wildlife survey efforts. Their goal is to drive down costs and increase the scale and effectiveness of wildlife metrics.

Taylor Wessing

Taylor Wessing is an international law firm with a presence in California, specifically in San Francisco.[66] They provide legal services to some of the world's most innovative people and businesses, focusing on sectors such as technology, media & communications, life sciences & healthcare, and venture capital. In the Climate Tech sector, Taylor Wessing offers comprehensive legal services that empower climate-focused initiatives. Their areas of focus include Clean Energy, Climate Reporting and Disclosure, Climate Tech: Environmental Permitting and Regulation, Biodiversity and Nature Protection.

59 https://www.aircapture.com/
60 https://www.taroai.com/
61 https://boomitra.com/
62 https://www.planet.com/
63 https://agscout.ai/
64 https://www.airelabs.com/
65 https://conservationmetrics.com/
66 https://www.taylorwessing.com/en/

Innovation Hubs

Yes SF

YesSF[67] is a California-based organisation dedicated to promoting sustainable development and climate resilience through innovative community-driven projects. Their initiatives, such as the "Yes SF Challenge," aim to bring innovative solutions to urban sustainability issues by offering entrepreneurs opportunities to deploy their technologies in San Francisco. These startups receive resources like connections to local stakeholders, funding, and support through the World Economic Forum's UpLink platform.[68]

9Zero

9Zero is a climate innovation hub based in San Francisco, with additional locations in Los Angeles, Seattle, New York and other U.S. cities.[69] The organisation serves as a community for professionals working on climate solutions, including startups, investors, academics, and service providers. 9Zero fosters collaboration through its coworking spaces, events, and digital networking platforms, offering opportunities for funding, partnerships, and knowledge-sharing.

Governmental bodies

San Francisco Department of the Environment

The San Francisco Department of the Environment is dedicated to advancing climate protection and enhancing the quality of life for all San Franciscans.[70] They create visionary policies and innovative programmes that promote social equity, protect human health, and lead the way toward a sustainable future. The department focuses on various initiatives, including waste reduction, sustainable transportation, and environmental justice.

San Francisco Chamber of Commerce

The San Francisco Chamber of Commerce is a vibrant business network that attracts, supports, and grows businesses through advocacy, economic development, and business development.[71] They champion all businesses across various industries in the city, working to make San Francisco a global economic force and a hub for innovation and entrepreneurship.

67 https://www.yessf.org/
68 https://uplink.weforum.org/uplink/s/
69 https://9zero.com/
70 https://www.sfenvironment.org/
71 https://sfchamber.com/

Non-profit Organisation

Climate Change AI

Climate Change AI is a global non-profit organisation that focuses on leveraging machine learning to address climate change.[72] They catalyse impactful work at the intersection of climate change and machine learning by organising workshops, publishing research, and fostering collaboration among researchers, practitioners, and policymakers. Their initiatives aim to accelerate the development and deployment of AI technologies to mitigate climate change and promote sustainability.

Rockefeller Foundation

The Rockefeller Foundation is a philanthropic organisation dedicated to promoting the well-being of humanity by advancing sustainable development and addressing global challenges.[73] They focus on finding and scaling solutions that advance opportunity and reverse the climate crisis. To support Climate Tech, the Rockefeller Foundation has committed over $1 billion over the next five years to advance global climate solutions. Their strategy includes integrating climate action across their core focus areas—power, health, food, and finance—and catalysing global action for solutions that benefit both people and the planet. They also prioritise achieving net-zero greenhouse gas emissions for their operations and endowment.

72 https://www.climatechange.ai/

73 https://www.rockefellerfoundation.org/

Venture Capitalist

Shell Ventures

Shell Ventures is the venture capital arm of Shell, established in 1996. They focus on investing in innovative companies that drive the energy and mobility transformation.[74] Their investments aim to lower emissions, electrify the energy system, provide data-based insights, and offer innovative consumer solutions. In the Climate Tech sector, Shell Ventures supports startups and scale-ups that develop technologies to promote sustainability and shape the future of the energy sector. They provide funding, technical expertise, and access to Shell's extensive network, helping these companies scale and deploy their technologies.

Cathay Innovation

Cathay Innovation is a global venture capital firm that invests in transformative businesses across multiple sectors, including AI, fintech, digital health, and energy.[75] Founded in Paris in 2015 and now managing over €2.5 billion in assets, the firm operates internationally with offices in North America, Europe, Asia, and Latin America.

During the week, the delegation engaged with more than 30 organisations through scheduled visits and impromptu meetings at networking events. These interactions revealed promising collaboration opportunities, which are discussed in the following chapter.

74 https://www.shell.com/what-we-do/technology-and-innovation/innovate-with-shell/shell-ventures.html

75 https://cathayinnovation.com/

Opportunities for Future Collaboration

State level policies and regulations and a drive to mitigate the impact of climate change has resulted in a strong and vibrant innovation ecosystem in California. Cooperation between the UK and California in Climate Tech has the potential to significantly enhance the UK's net-zero and sustainability ambitions while also benefiting from international expertise. Engagement with several key technology and innovation stakeholders in California has highlighted a number of opportunities for future collaboration.

Opportunity 1

UK and California strengths in different parts of the innovation journey allow for SMEs to have resources for an end-to-end journey

The UK is recognised for its ability to nurture ideas in the early stages of their innovation journey, primarily due to its strong grant funding system. In contrast, California's ecosystem is ideally suited for scaling, supported by prominent corporations in Silicon Valley, an innovative culture, and policies that encourage scale-up efforts, like the IRA. UK start-ups can take advantage of this environment to test and enhance their ideas in a nurturing atmosphere for growth. Collaboration between the UK and California would create a strong end-to-end environment for SMEs in their innovation journey, allowing them to tap into different resources when relevant.

Opportunity 2

Creation of a UK-California working group to facilitate knowledge exchange

Currently, California's policy and innovation focus primarily at the state level. As a prominent leader in the U.S., California has the potential to establish and strengthen global partnerships with public institutions in other countries to support innovation. Collaborating with the UK and other nations to investigate areas where California excels, such as blue carbon, kelp and seagrass farming, and drought innovation, could enable other countries to benefit from its research. California boasts leading universities like UC Davis and NGOs such as the YES SF that are tackling climate challenges; however, there appears to be a gap in information sharing beyond state lines. Creation of a UK-California working group would enable international data sharing, recommendations of global standards, and an overall knowledge exchange for tackling global climate problems.

Opportunity 3

Establishment and upkeep of a global Public Data sharing platform

As AI is increasingly integrated into climate solutions, there is a critical need for validated and easily accessible data to effectively train language learning models. A recurring issue is that while universities in California may be well funded for specific projects, the data used is often not maintained after project completion. Creating and sustaining public data on an international level would better support climate innovations, collaboration, enabling quicker entry into international markets and resulting in higher quality solutions that adequately address various climate issues. The UK has emerged as a leader in public data initiatives, spearheaded by organisations such as Ofgem, Energy Systems Catapult, UK Power Networks, and others, and could offer valuable insights on transparency and governance for an international initiative. Open public, commercial, and private datasets would all facilitate AI integration with climate innovation.

Opportunity 4

Collaboration to Guide International Carbon Credit Markets Standards

The UK has a well-established ecosystem of independent third-party organisations and standards bodies that allow the UK to build a foundation for carbon trading and offer independent third-party validation.

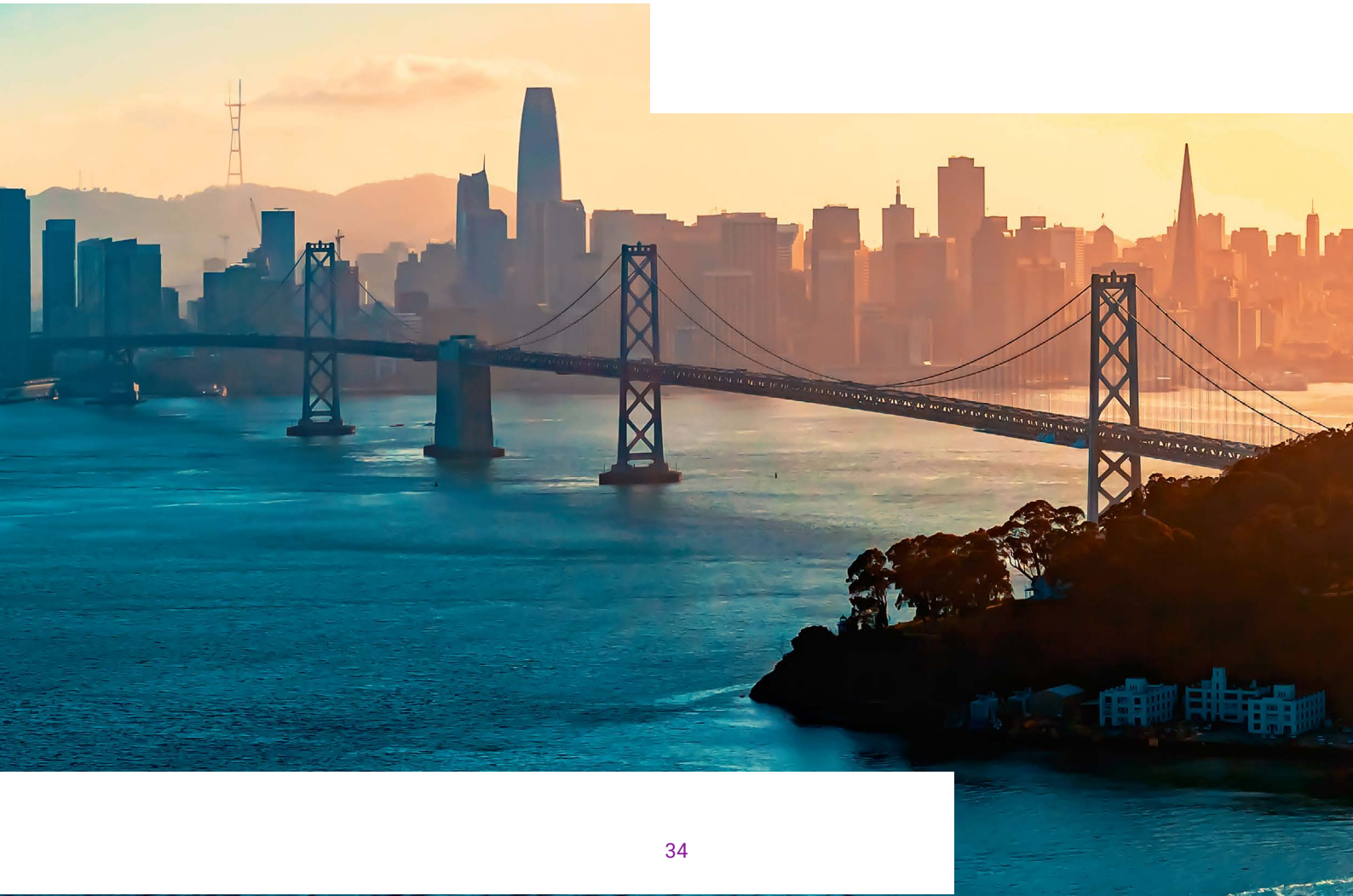
The GEM highlighted a booming market for SMEs in the carbon credits sector, and growing interest from both the public and private sector. The UK and California could collaborate to provide guidance on international standards for carbon credit markets, which would allow SMEs in the sector to better scale and expand internationally.

Opportunity 5

Co-developing Carbon Capture Technologies

Given the low cost of energy in the US, attention is primarily directed towards carbon capture technologies rather than renewable energy generation. The UK has a strong history in materials design, specifically developing and implementing alternatives to amine-based carbon capture technologies across various areas such as solid sorbents, calcium looping and Direct Air Capture.

California and the UK have a unique opportunity to learn from each other in these specific areas of carbon capture technology. The UK could provide valuable insights or act as a consultant in developing alternative carbon capture and reduction solutions, such as the deployment of enhanced anaerobic digestion.



Opportunity 6

Land-based Solutions

The UK has strong data-driven strategies and is a leader in Dynamic Land Intelligence™ (DLI), including satellite monitoring, AI, and IoT, to optimise land use. The Agri-Tech Strategy has backed projects in precision agriculture, such as the Smart Crop Monitoring initiative, which employs AI and sensors to enhance land productivity and minimise waste. Additionally, the UK excels in directly linking sustainable practices through various policies and financial mechanisms. The Environmental Land Management Scheme (ELMS) and Natural Capital accounting methods create frameworks to reward sustainable land management.

California possesses a vast area of unmanaged land that could be harnessed for climate innovation by developing effective long-term strategies and land policies. As a technology hub, California has also the opportunity to collaborate on scaling these technologies worldwide. There is potential for joint efforts to promote sustainable land use practices beyond traditional organic and regenerative approaches.

Opportunity 7

AI based Climate solutions for cross-sector innovation

With an increased focus on climate innovation, there's an opportunity to share learnings across industries, to further promote scaling the necessary innovations and infrastructure to address climate issues. Innovations in satellite data, advanced manufacturing and materials, land use and agriculture could effectively integrate with industry supply chain and across sectors to encourage its development and accelerate adoption.

Climate Tech and LA 2028 Olympic Game: an opportunity for UK Climate tech companies.

The Los Angeles 2028 Olympic and Paralympic Games (LA28) are dedicated to hosting a sustainable event by incorporating Climate Tech and strategies that reduce environmental impact.

The LA28 Games offer a remarkable opportunity for UK Climate Tech companies to broaden their reach and display their innovations to a global audience. LA28's emphasis on sustainability and the use of cutting-edge technologies aligns perfectly with the expertise of UK firms in this sector. LA28 is committed to hosting an eco-friendly event by using existing venues, improving public transport, and adopting measures to minimise carbon emissions. With these commitments, LA28 aspires to set a new standard for environmentally responsible large-scale events, leveraging Climate Tech and sustainable practices to host a green and impactful Olympic Games.

Transformative Repurposing of Current Venues

LA28 plans to use existing world-class facilities, eliminating the need for new construction. This "radical reuse" strategy focuses on refurbishing and modernising current venues, thereby reducing carbon emissions associated with building new structures.
Inside the Games

Enhancement of Public Transportation

To decrease reliance on personal vehicles, LA28 is investing in public transit infrastructure. The city aims to complete 28 transportation projects before the Games, including new Metro stations and expanded bus services. Additionally, there are plans to eliminate public parking at Olympic venues to encourage the use of public transportation.
Financial Times

Addressing Scope 3 Emissions

LA28 acknowledges the challenge of managing Scope 3 emissions, which encompass indirect emissions from sources like supply chains and spectator travel. The organising committee is developing strategies to engage stakeholders and implement sustainability measures to mitigate these emissions.

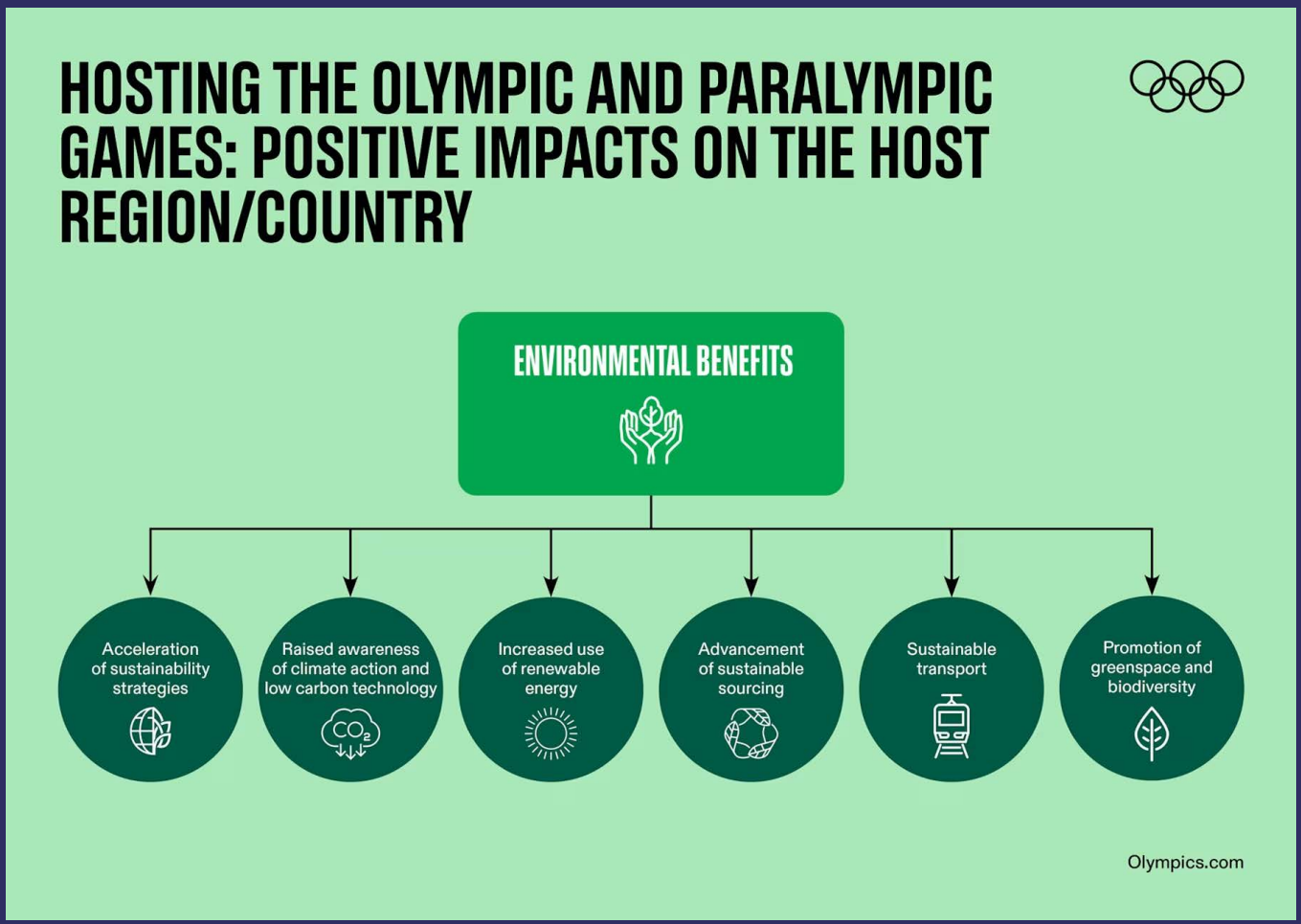
Scope3 Magazine

Community Collaboration

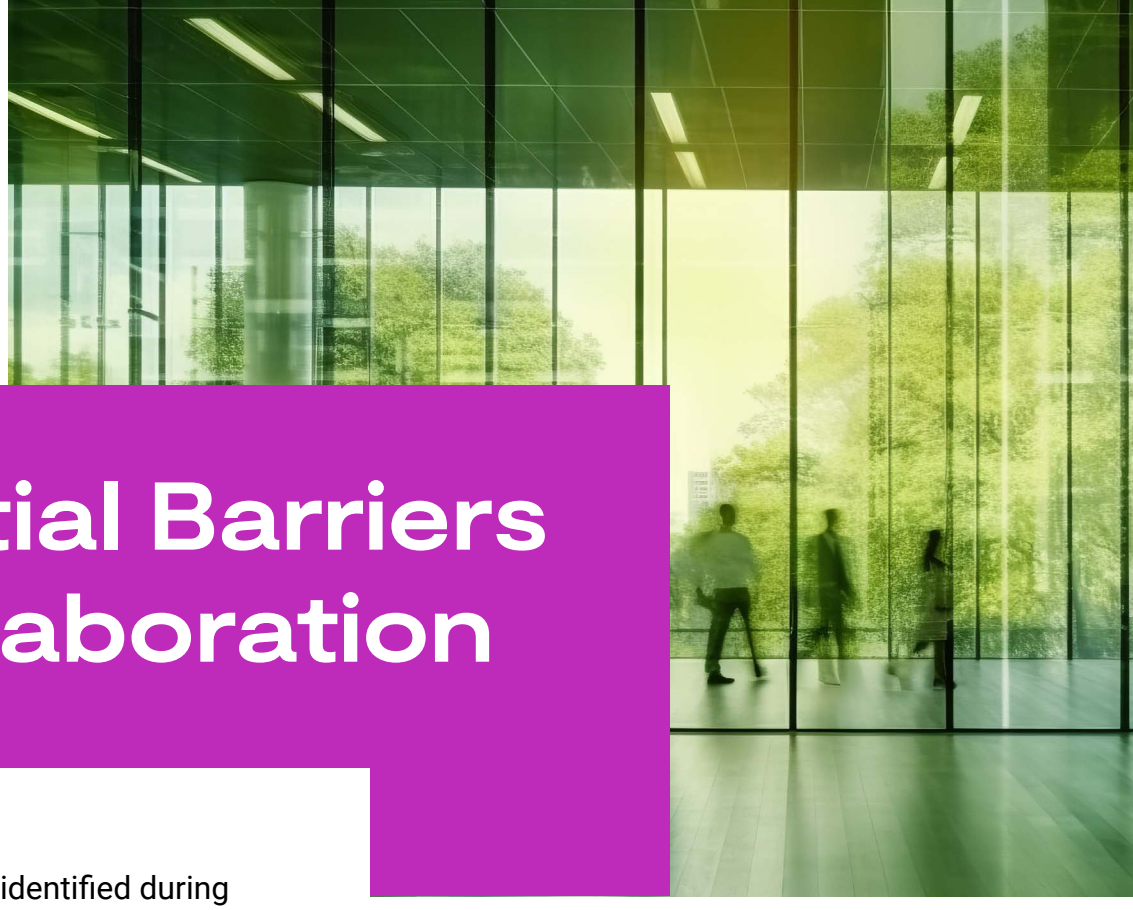
Engaging with local communities is central to LA28's sustainability efforts. By involving community leaders in planning, the Games aim to reflect local values and ensure that sustainability initiatives align with the needs and expectations of residents.

LA28

UK Climate Tech firms focusing on energy efficiency, renewable energy, carbon capture, and sustainable building materials can provide solutions that support these goals.



Source: Olympics.com



Potential Barriers to Collaboration

The top five challenges identified during the GEM were:

Challenge 1

California's Self-sufficiency

While California's innovation ecosystem makes it an appealing market, it also poses a challenge by being a highly self-reliant and inward-looking system. The attractiveness of Silicon Valley has led to over 30% of Bay Area residents being international, indicating a wealth of skills in the region. Major business conglomerates and universities are closely aligned and exhibit an 'America First' mindset. California excels in supporting companies during the scaling phase of their innovation journeys, with its private ecosystem accounting for 46% of all US private funding. Additionally, many public funding schemes for start-ups in the US, such as public grants or loans, necessitate the company to maintain a US headquarters.

Challenge 2

Regulation Misalignment

Although California leads US climate policy, notable differences exist between the US and UK that can create separate markets. Disparities in the decarbonisation timelines across various sectors may influence the demand for specific innovations, necessitating adjustments to their business strategies.

Despite the significant changes in US climate policy under the Trump administration, California has publicly stated its intention to maintain California's regulatory standards and uphold its leadership in climate policy, stating that California is "definitely trying to future-proof California in every, shape or form."[76] The state is leveraging its economic power as the fifth-largest economy globally to influence industry standards and reaffirm its commitment to ambitious climate goals.[77]

Challenge 3

The Climate Tech sectors in California and the UK address different innovation needs due to their distinct environmental challenges

The Climate Tech sector in California and the UK addresses different innovation needs due to their unique environmental challenges. Although there are similar UK focuses such as carbon capture, carbon markets, and decarbonising buildings, California innovation has an emphasis on wildfires, groundwater depletion and drought control, particularly in the agricultural sector. With distinct priorities, there may be limited overlap in immediate goals. Additionally, divergent standards and policies could complicate technology transfer and scaling.

Challenge 4

Access to the EU market

Investors are increasingly viewing the UK separately from the rest of Europe, with many choosing to set up offices within the EU due to its larger post-Brexit market. The EU's more favourable regulatory environment also contributes to this shift, as it provides more predictable and consistent policies compared to the UK's changing post-Brexit landscape.

Challenge 5

Lack of Open Data

The lack of open data in California poses significant challenges for climate start-ups aiming to develop and scale their technologies. Many of these companies depend on access to environmental, water usage, and emissions data to build predictive models, optimise resource management, or validate their solutions. However, fragmented reporting systems, limited transparency, and the inconsistent availability of data across sectors hinder their ability to access critical information. For instance, water usage in agriculture and urban contexts often remains unreported or is not standardised, complicating efforts to create solutions that promote efficiency and sustainability. This gap in open data stifles innovation and hinders the development of technologies designed to tackle California's unique climate challenges, such as drought and wildfire mitigation.

76 https://www.politico.com/news/2024/10/15/trump-california-environment-supreme-court-00183585

77 https://www.nytimes.com/2024/10/12/climate/california-tries-trump-proofing-its-climate-policies.html

Conclusions

The California Global Expert Mission (GEM) has highlighted the immense potential for UK-California collaboration in the Climate Tech sector. Both regions are global leaders in advancing climate innovation, with complementary strengths that can be harnessed to tackle shared climate challenges. California's well-established ecosystem, characterised by its strong focus on scaling innovations and fostering public-private partnerships, provides a conducive environment for collaboration with the UK's expertise in incubating and developing cutting-edge technologies.

Key opportunities for collaboration include the establishment of joint accelerators and knowledge-sharing platforms to bridge the gap between early-stage innovation and market scalability. Initiatives to address parallel climate challenges and efforts to enhance international data standardisation can significantly accelerate the development of impactful solutions. California's nation-leading focus on addressing climate issues, such as flooding, water management, and carbon capture, complements the UK's innovations in similar cross-cutting sectors, including nature-based solutions and AI-driven climate tools.

Challenges remain, particularly around differences in regulatory environments, market dynamics, and accessibility of data. Addressing these barriers are opportunities of their own and will require focused collaborative efforts to foster open data ecosystems, align regulatory frameworks, and promote mutual collaboration between private and public sectors in both regions.

By leveraging their respective strengths, California and the UK have the opportunity to co-develop scalable climate solutions and frameworks that contribute to global decarbonisation goals. As climate challenges grow more complex, fostering such strategic international partnerships is imperative. The outcomes of this GEM underline the need for continued engagement, joint investment, and shared innovation to build a sustainable future. These partnerships will not only enhance the competitiveness of both regions but also set a global precedent for collaborative climate action.

Innovate UK

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