THE FUTURE OF AGRICULTURE AND FOOD SYSTEMS

A CALIFORNIA 100 ISSUE ROADMAP FROM RESEARCH TO ACTION

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California occupies a unique and significant role in international and national food production and distribution. In 2020, the United States was the largest exporter of food with $124 billion in exports—10 percent of total global exports. The U.S. is also the largest global producer of almonds, pistachios, milk, and poultry, with much of this production coming from California. In addition to producing food for its own residents—who comprise 12 percent of the total U.S. population—California produces and distributes the highest volume of fruits, tree nuts, berries, melons, vegetables, and milk to other states.

Since its formation as a state nearly 175 years ago, California has extended its sphere of influence in agricultural production through large-scale irrigation projects and easily available cheap labor. However, the climate and labor conditions that enabled California to become a national food leader are rapidly changing. Climate challenges include multi-year droughts, intense wildfires, dwindling water supplies, and potential future "megafloods." The state also confronts new challenges with respect to farm labor: even though regulations have improved working conditions and wages for farmworkers, demographic changes in sending countries and lack of affordable housing have made increasingly difficult to recruit new generations of farmworkers. At the same time, new technologies also hold the prospect of increasing food productivity and creating new food products that are commercially viable as well as labor-friendly and environmentally sustainable.

FROM RESEARCH TO ACTION

What will these changes mean for current and future generations of Californians, and how can we make sure that California's future in agriculture and food systems remains innovative, resilient, inclusive, sustainable, and equitable?

In October 2022, the California 100 Initiative released a policy and future scenarios report on agriculture and food systems produced by **California State Polytechnic San Luis Obispo's College of Agriculture, Food and Environmental Sciences**. Professor Anastasia Telesetsky conducted extensive research for the report, and met with a wide variety of experts to examine possible scenarios and policy options for future-focused action.

"For decades, California has been a cornucopia of food production feeding Californians, Americans, and many others around the world. We are now facing a novel future of system-wide water shortages, warmer year-round temperatures, and other food production stressors including wildfire and megaflood disasters," said **Professor Anastasia Telesetsky**. "California's food producers will need to adapt to these system-wide changes. With this challenge will come new innovative ways of feeding ourselves including indoor farming and alternative protein production that will hopefully offer new opportunities to build a more equitable and sustainable food system."

FUTURE SCENARIOS

Other key takeaways from the California 100 report include a consideration of policy options that improve agriculture and food systems under **four future scenarios** that center around two critical dimensions: whether or not California will succeed in adapting to climate change, and whether or not the state finds a way to ensure its agriculture and food processing sectors have access to sufficient water.

In a context where California has access to sufficient water, the scenarios range from a strong agricultural future where the state has been able to address the effects of climate change to a future where California relies heavily on food imports because it has failed to address the threats posed by wildfires and excessive heat. In a context of insufficient water, the scenarios range from the growth of "next-generation" greenhouses, aquaculture, cell-cultured proteins, and precision fermentation to a significant loss in agricultural production and labor, depending on whether or not California is able to successfully address various challenges associated with climate change.

Regardless of the scenario, the research commissioned by California 100 indicates that we should refrain from "doing nothing" as a fall-back option. In order for California to perform better under these various scenarios, we need public- and private-sector agencies to research, deliberate over, and enact solutions that advance **innovation** (through technological, policy, and process improvements), **resilience** (including in labor, water, and other environmental resources), **inclusion** (by deepening community awareness and engagement in food system solutions), **sustainability** (by improving the ability to make progress in resource conservation), and **equity** (by prioritizing the benefits of new policies and technologies to communities of color and low-income communities that have historically borne the brunt of environmental burdens).

Artist rendering of future scenarios in agriculture and food systems
Source: California 100

THE CALIFORNIA 100 ROADMAP

The California 100 report on policies and future scenarios is the first step in a multi-stage process that is designed to inspire and engage Californians—from a variety of sectors and all walks of life—to build a stronger future for current and future generations. In the summer of 2022, our expert and intergenerational Commission will conduct a series of listening sessions throughout the state, to solicit feedback on the ideas generated by our research and to generate additional big and bold ideas for consideration by public and private agencies, as well as by everyday Californians. We will also be generating insights from our policy innovation projects throughout the state that cover a variety of topics, and our deep engagement on questions of science and technology as they relate to a variety of issues, including agriculture and food systems.

In early 2023, we will take these various policy ideas and scenarios, and engage in a process of deliberative democracy featuring a representative cross-section of California residents. The goal of this deliberative exercise is to understand the conditions under which Californians from various walks of life can come to agreement on the long-term challenges facing the state and, importantly, the kind of bold and visionary solutions we need to put the state on a stronger trajectory for the next century.

California 100 will also be engaging intentionally with young Californians, who have the most to gain or lose in the coming century. Our team members will engage young people throughout the state, including in high school and college settings, and will organize a statewide youth summit that will produce a manifesto for the future of California.

Finally, in Winter and Spring 2023, our intergenerational Commission will draft a vision and strategy document for the future of California, based on briefing materials that build on insights from the various streams of work. California 100 will then launch a culminating event in early summer 2023 that serves as the formal launch of the vision and strategy document and, importantly, also brings together leaders and partners from our various streams of work and prior engagement.

Our culminating event in the summer of 2023 will:

1. Showcase the pressing need for California to prioritize long-term futures,
2. Build an ambitious yet achievable vision and strategy that are grounded in rigorous research and community engagement, and
3. Inspire others to do the same, providing tools that a variety of partners (including policymakers, government agency officials, business leaders, activists, researchers, and next-gen leaders from various sectors) can use to build their own aspirational visions and strategies for California's long-term success.

ABOUT CALIFORNIA 100

The California 100 Initiative envisions a future that is innovative, sustainable, and equitable for all. Our mission is to strengthen California's ability to collectively solve problems and shape our long-term future over the next 100 years. California 100 is organized around 15 policy domains and driven by interrelated stages of work: research, policy innovation and engagement with Californians. California 100's work is guided by an expert and intergenerational Commission. Through various projects and activities, California 100 seeks to move California towards an aspirational vision—changing policies and practices, attitudes and mindsets, to inspire a more vibrant future.

California 100 staff members compiled this roadmap document, drawing on research in two publications—a Policies and Future Scenarios Report and a Facts-Origins-Trends Report—by Anastasia Telesetsky from California State Polytechnic San Luis Obispo's College of Agriculture, Food and Environmental Sciences. The two agriculture and food systems-related publications are part of California 100's larger research stream of work, built in partnership with 20 research institutions across the state.

California 100 sponsored grants for data-driven and future-oriented research focused on understanding today and planning for tomorrow. This research, anchored in California 100's 15 core policy domains, forms the foundation for the initiative's subsequent work by considering how California has gotten to where it is and by exploring scenarios and policy alternatives for what California can become over the next 100 years.

The California 100 Initiative is incubated through the University of California and Stanford.

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To learn more about the future of agriculture and food systems in California, visit the California 100 website at California100.org, where you will find our detailed reports on the topic, and more information about our research partners.