Glossary

Term	Definition
Cropland repurposing	Multibenefit cropland repurposing is the transition of irrigated conventional agriculture to uses that promote positive side effects, such as water savings, improved public health, new socioeconomic opportunities for local communities, and ecosystem benefits. In some cases, farmers can be compensated to transition their farmland to alternative beneficial uses, such as parks, habitat corridors, new socioeconomic opportunities, non-irrigated rangeland, space for green economy activities and renewable energy, and wildlife-friendly multibenefit recharge basins (EDF, 2021; Fernandez-Bou et al., 2023). To be successful, strategic cropland repurposing should follow a transdisciplinary approach. A transition to agroecology, regenerative, or other sustainable forms of agriculture can be considered cropland repurposing.
Cropland retirement	Removal of land from agricultural production, often due to lack of access to water for irrigation, excessive soil salinity, or to other issues inhibiting farming.
Disadvantaged community	Community classified as disadvantaged by a government tool according to one or more indicators. If the indicator is only the Median Household Income of the community (MHI; as used by the California Department of Water Resources), communities can be spatially identified by their boundaries, and they are classified as disadvantaged (MHI ¡ 80% of the state's) or "severely disadvantaged" (MHI ¡ 60% of the state's). The most common classification in California is given by the CalEnviroScreen score, which is calculated after 21 indicators about pollution burdens and population characteristics. Its census tract scale, while appropriate for cities, limits its use in underserved small rural communities. Some indicators of disadvantage are often opposite between rural and urban areas, which may lead to biases in definitions. The minimum size considered in the classification can also affect very small communities by 'dissolving' them within wealthier areas (De León, 2012; Fernandez-Bou et al., 2021b; OEHHA, 2021).
Socially disadvantaged farmers and ranchers	The United States Department of Agriculture (USDA) defines socially disadvantaged farmers and ranchers (SDFRs) as those belonging to groups that have been subject to racial or ethnic prejudice. SDFRs include farmers who are Black or African American, American Indian or Alaska Native, Hispanic or Latino, and Asian or Pacific Islander. For some but not all USDA programs, the SDFR category also includes women.
Idle land	Land is idled when water scarcity does not allow irrigation, leaving the land temporarily without production while access to water is limited. This is common in California and other Mediterranean climate regions in which the wet season is not overlapped with the main plant growing season. Often, to avoid undesirable vegetation or to prevent endangered species from finding suitable habitat in the idle lands, California farmers use tillage in these dry lands, which releases large amounts of pesticide-laden dust and degrades the soil health (University of California, Agriculture and Natural Resources, 1994; Sanz-Pérez et al., 2019). Often, the concept of "idle" is confused with "fallow". Dust from idle land can be reduced by decreasing tillage (Sharratt et al., 2010). Idling land is not cropland repurposing.
Fallowed land	Land is fallowed to bring soil health by allowing the soil to rest, often with beneficial cover crops, even to create habitat for beneficial environmental purposes, and for 5 years or less (García-González et al., 2018; Ghimire et al., 2019; Sanz-Pérez et al., 2019; Tarjuelo et al., 2020; Eurostat, 2024). Fallowing land with adequate practices to improve soil health, as the internationally recognized definitions of fallow land indicate, can decrease dust emissions (Thorne et al., 2003) and even prevent desertification (Ikazaki et al., 2011). Fallowing land is not cropland repurposing.

Term	Definition
Transdisciplinarity	Approach to work that involves integrating the knowledge and methods of different scientific disciplines with collaboration with interested groups to create shared knowledge that is meaningful to people affected first-hand. While multidisciplinarity involves scientists working on the same topic with their own approaches, and interdisciplinarity involves scientists blending their approaches to create a new one, transdisciplinarity transcends interdisciplinarity by integrating non-academic groups interested in and affected by the process.
Agrivoltaics	Systems that combine solar photovoltaic electricity generation and agriculture (crops and/or livestock) on the same shared parcel of land. Solar panels can be installed between or above crops, and they can serve as fences, windbreaks, and/or provide shade for animals and shade-tolerant plants (Fernandez-Bou et al., 2024).
Ecovoltaics	Solar power systems that support ecosystem functions like habitat conservation, biodiversity, and air quality control. It integrates ecological knowledge to understand how solar panels influence both non-living components (such as sunlight, water, and air) and living organisms (like plants, animals, and beneficial soil microbes). The goal is to ensure that solar infrastructure not only generates energy but also enhances ecosystem health and sustainability.
Managed aquifer recharge	Strategy to address aquifer depletion and enhance groundwater sustainability involving engineered methods to increase water infiltration beyond natural processes. Recharge potential can be assessed using geophysical techniques like Aerial Electromagnetics (Knight et al., 2018) to identify subsurface characteristics to choose infiltration basins and drywell injection locations. Monitoring pollutants is essential to protect drinking water and recharge efficiency, including avoiding pollution for public health and low-turbidity water to prevent clogging. Focusing recharge efforts along rivers and floodplains offers natural filtration, minimizes infrastructure needs, and supports riparian ecosystems. Managed aquifer recharge can increase resilience against droughts, decrease flooding risks, and help adapt to climate change.
Agroecology	Agroecology is the integrated study of ecological processes applied to agricultural systems, aiming to optimize interactions between plants, animals, humans, and the environment for sustainable food production. It promotes biodiversity, soil health, water conservation, and resilient ecosystems by incorporating traditional farming practices with modern scientific knowledge. Agroecology emphasizes a holistic approach that considers productivity along with social, cultural, and environmental impacts, offering a pathway for more sustainable and equitable food systems. It advocates for reducing chemical inputs, enhancing biodiversity, and fostering natural pest control and nutrient cycling. Agroecology plays a critical role in addressing global challenges like food security, climate change, and biodiversity loss through an ecologically sound framework for agricultural sustainability (Wezel et al., 2009; Altieri, 2018).
Polyculture	Polyculture is an agricultural practice where multiple crops or livestock species are grown together in the same space, promoting biodiversity and mimicking natural ecosystems. This method enhances soil health, reduces the spread of pests and diseases, and improves resource use efficiency, such as water and nutrients. Polyculture systems are particularly beneficial in smallholder farming, improving resource efficiency and reducing the need for chemical inputs like pesticides and fertilizers (Adamczewska-Sowinska and Sowiński, 2020).
Biochar	Biochar is a solid substance that is produced in a controlled pyrolysis process (heat-induced organic matter decomposition in the absence of oxygen) and has a high content of stable organic carbon although specific characteristics vary strongly depending on feedstock, pyrolysis temperature, and pretreatment (Sohi et al., 2010). Production of biochar from agricultural waste products supports a circular economy (Joseph et al., 2021).
Community benefits agreement (CBA)	A CBA is a legally enforceable contract, which sets forth a range of community benefits that a project proponent agrees to provide as part of a project. CBAs are often established between developers and coalitions of community organizations to ensure affected residents share in the benefits of development projects.
Community benefits plan (CBP)	A CBP is a strategic framework that organizations should develop when applying for funding from the U.S. Department of Energy (DOE) or other agencies. These plans are designed to ensure that projects deliver tangible benefits to local communities, particularly those that have historically faced environmental and economic injustices.

Term	Definition
Wellbeing economy	Holistic interpretation of the economy with the fundamental goal of achieving sustainable wellbeing with dignity and fairness for humans and nature. A wellbeing economy is an integrated and interdependent system embedded in society and nature.
Solidarity economy	Social and economic framework that prioritizes the wellbeing of people and the environment over profit. It encourages community-based institutions like cooperatives, trusts, nonprofits, and enterprises to engage in economic activities that benefit workers, enabling them to support their families while also caring for the planet. Profits are used to promote human flourishing, not individual gain. Key aspects include democratic participation in decision-making, equity across all dimensions, cooperation, sustainability, and pluralism, ensuring that diverse voices and approaches contribute to community resilience and prosperity (OECD, 2021).