Delta Adapts: Adaptation Strategies

Information Sheet

Delta Stewardship Council
A CALIFORNIA STATE AGENCY

The Need to Adapt

As the climate changes, more frequent heat waves, droughts, floods, and wildfires will put increasing pressure on Sacramento-San Joaquin Delta and Suisun Marsh (Delta) communities, habitats, farms, and infrastructure. The Delta Stewardship Council (Council) was created to advance the State's coequal goals for the Delta: a more reliable statewide water supply and a healthy and protected ecosystem. Within that framework, the Council and several of its partners are assessing how climate change will affect the region and identifying ways to prepare the system for the future. **These methods for addressing and preparing for climate change are called adaptation strategies.**

Adaptation is a change or series of changes made to adjust to current or future climate change and its effects.

Resilience is the ability of an individual, community, organization, or natural system to recover from shocks and stresses and to adapt and grow after being disrupted.

The Council's climate change Vulnerability Assessment identifies how climate change will affect the Delta, including impacts from flooding and sea level rise, extreme heat, drought, and wildfire smoke.[1] The Council recently released an Adaptation Plan identifying adaptation strategies to respond to these vulnerabilities.

Delta Adaptation Strategies and Actions

The Council's Delta Adapts: **Adaptation Plan** identifies 22 adaptation strategies and over a hundred specific actions to implement them as part of our agency's initiative to create a climate-resilient future. The following pages summarize these strategies and the climate change vulnerabilities they address at a high level, along with some examples supporting actions that the Council and its partners plan to implement to improve resilience.

[1] For the full Vulnerability Assessment, visit: rebrand.ly/dava24.

FLOOD RISK REDUCTION

DELTA ADAPTS
Focus Area

Vulnerabilities

Climate-induced hydrologic variability and sea level rise are expected to **intensify flooding** across the entire Delta region

The Delta's **1,100 miles of levees** are designed to operate under historical conditions that did not consider climate change, which will stress the whole system

Strategies

- Develop climate-informed understanding of Delta flood dynamics
- Strengthen and upgrade Delta levee system
- Restore ecosystems for flood mitigation
- Improve emergency preparedness and response
- Manage and expand upstream water storage capability
- Use technology and land use planning to reduce risk

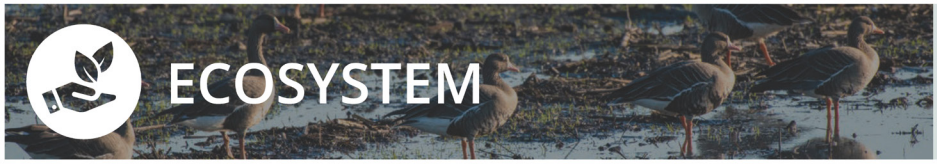
Example Actions

- Integrate climate change into risk assessment models (FL-1-1)
- Integrate climate risks and equity into the Delta Levees Investment Strategy (FL-2-2)
- Monitor and evaluate the effectiveness of multi-benefit projects for flood risk reduction (FL-3-2)
- Raise awareness about the availability and importance of flood insurance (FL-4-6)
- Use excess floodwater to recharge underground aquifers (FL-9-2)
- Develop communication channels and protocols for flood warnings and advisories (FL-6-1)

The Delta is a flood-prone area. Risk will grow as sea levels rise and storms become more frequent. Its levees protect communities from flooding, but the system is threatened as waters rise. Socially vulnerable communities are more at risk.[2]

The Delta Adapts flood risk reduction adaptation strategies focus on **understanding flood risk, strengthening the levee system, protecting ecosystems, improving emergency communications and flood response, collecting more water upstream to reduce flows and downstream water levels, and using smart urban planning and farming practices to lessen flood risk.**

[2] For information on how the Council defined social vulnerability, see the Equity Technical Memorandum, available on the Delta Adapts web page (deltacouncil.ca.gov/delta-plan/climate-change) under "Vulnerability Assessment Supporting Attachments."



ECOSYSTEM

DELTA ADAPTS
Focus Area

Vulnerabilities

Land development and insufficient shallow water areas **leave little room for habitats and species to migrate**

Increasing heat, variable precipitation, sea level rise, and climate extremes impact **ecosystem health and biodiversity**

Strategies

- Restore ecosystems to adapt and support native species
- Build capacity and partnerships for ecosystem resilience
- Protect ecosystems by halting and reversing subsidence
- Use nature-based solutions to increase resilience of developed areas

Example Actions

- Restore more natural stream flows and functions (ECO-1-10)
- Prioritize nature-based solutions and multi-benefit projects (ECO-1-4)
- Partner with and fund tribes to identify and implement nature-based solutions (ECO-3-2)
- Prioritize and incentivize land use types that halt or reverse subsidence (ECO-2-1)
- Increase tree canopy cover and other green spaces in developed areas (ECO-4-2)

The Delta is home to hundreds of species of plants and animals, some of which are threatened or endangered, like the Delta smelt and Chinook salmon. Because human activities have damaged its ecosystems, species and habitats are especially vulnerable to additional stress from climate change.

The Delta Adapts approach to ecosystem adaptation involves **restoring and connecting habitats, improving water flows, and stopping or reversing land subsidence** (sinking). Strategies focus on managing ecosystems to protect native species and biodiversity, limit invasive species, and enhance the health of urban ecosystems.

DELTA ADAPTS
Focus Area

Vulnerabilities

Heat, drought, flooding, reduced chill hours, sea level rise, and decreased water quality can all decreased **crop yield and quality**

The above vulnerabilities and market forces impact the **economic stability of industry**

Subsidence, saline soils, and land use changes impact **land viability for agriculture**

Strategies

- Equitable food system
- Climate-smart farming
- Diversification of revenue on agricultural land
- Strategic land retirement

Example Actions

- Improve and expand irrigation efficiency practices (AG-1-1)
- Create training, employment, and land access opportunities for the next generation of farmers (AG-2-2)
- Support and fund environmental credits (AG-3-3)
- Support continued resources for land transition (AG-4-4)

Agriculture is a major part of the Delta's history, culture, and economy. Many of its crops are sensitive to changes in salinity, temperature, and watering schedule, which will all be affected by climate change. These changes can affect crop yield, quality, and revenue for farmers.

Adapting Delta farming to climate change can support more efficient agricultural water use, healthier soils, and conversion to crops better suited for a drier and hotter climate. Delta Adapts' agriculture adaptation strategies broadly focus on using alternative farming practices, diversifying how agricultural land is used, retiring no longer productive farmland, and creating a more equitable food system by supporting farmworkers and small family farms.

WATER SUPPLY RELIABILITY

DELTA ADAPTS
Focus Area

Vulnerabilities

Water supply will likely decrease while demand increases due to heat, more variable precipitation, decreased snowpack, and sea level rise

Drought and salinity intrusion will increasingly harm **water quality**

Extreme weather could damage the network of **water conveyance** infrastructure and levees that protect water from salinity intrusion

Strategies

- Reduce reliance on the Delta through conservation and local water supply development
- Increase storage of surface and groundwater supplies
- Modify reservoir operations
- Modify water quality standards
- Modify water infrastructure

Example Actions

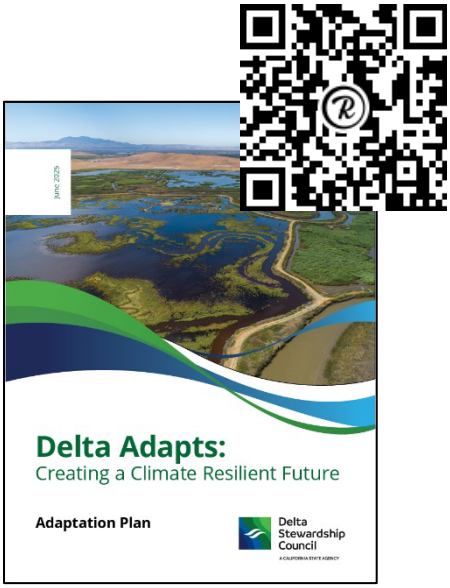
- Pilot projects promoting urban and agricultural water conservation (WSR-1-2)
- Invest in flood-managed aquifer recharge (WSR-2-4)
- Improve water supply and demand forecasting models for decision-making (WSR-4-1 through WSR-4-3)
- Develop comprehensive monitoring programs to detect HABs (WSR-5-7)
- Improve Delta levees (WSR-3-1)

Twenty-seven million Californians, more than 3.7 million acres of agricultural land, and thousands of people across the Delta's rural and urban areas rely on water conveyed through it. Climate change in the Delta and its watersheds will reduce water supply, increase demand, and lessen the performance of California's water supply systems.

Adapting water supply systems will require **reducing California's dependence on the Delta for water, improving water supply and collection infrastructure, updating water quality standards, and changing how reservoirs are operated**. There is also a need to address challenges inherent in the California water rights system, including increasing awareness of the need for strong water rights enforcement, developing new policies and supporting investments in science related to flows and endangered species needs, and supporting efforts to define further and protect tribal and cultural beneficial uses of water.

Learn More!

Moving forward, the Council will work with its partners and other interested parties to implement the strategies outlined in the Plan. To review the **Delta Adapts: Adaptation Plan** or find more information on this effort, visit deltacouncil.ca.gov/delta-plan/climate-change.



Please email any questions or comments to climatechange@deltacouncil.ca.gov.

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