Veles Water Weekly Report

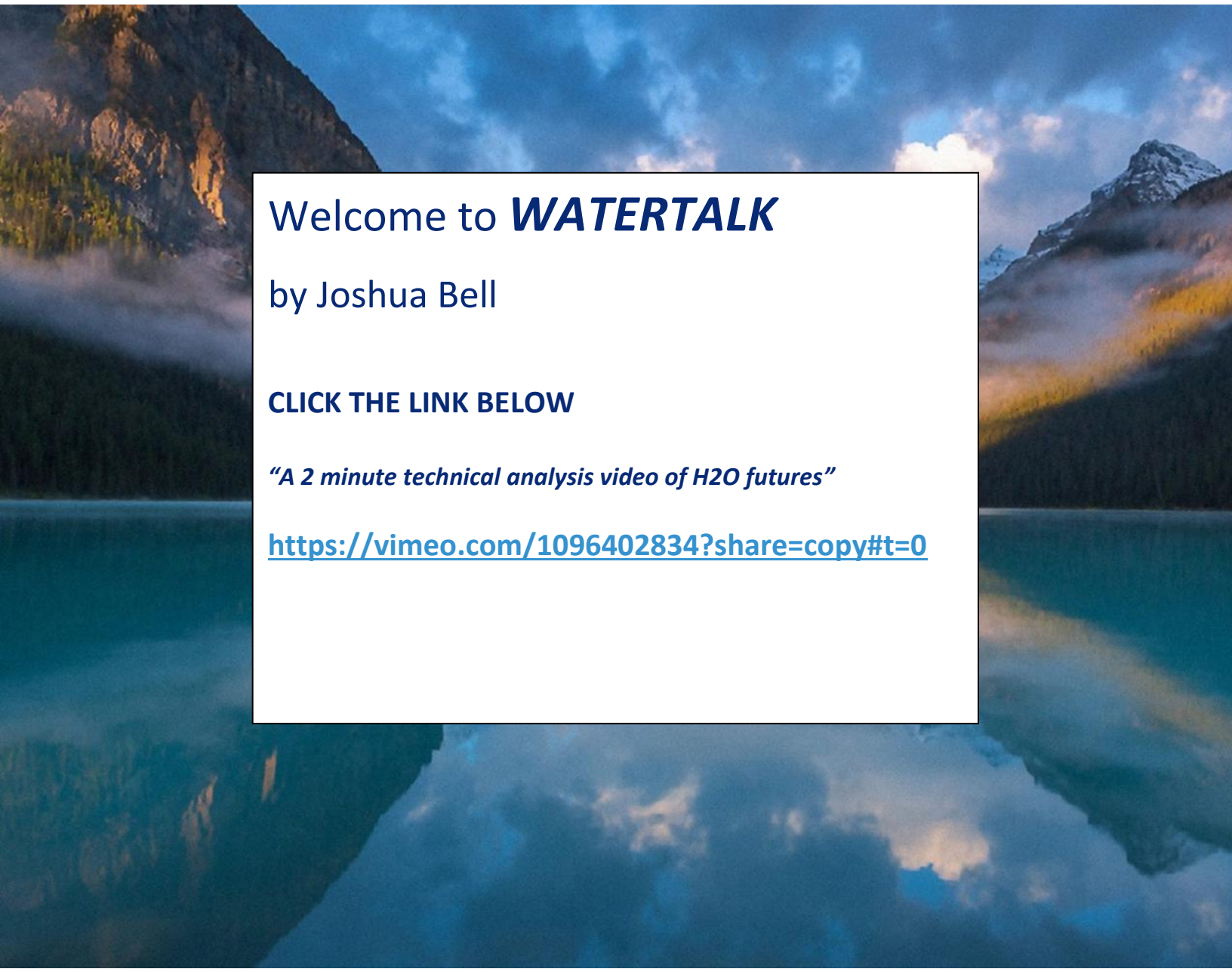
June 26th 2025

Authors:
Lance Coogan - *CEO*
Joshua Bell - *Research Analyst*

research@veleswater.com
+44 20 7754 0342

Veles Water

WATER FUTURES MARKET ANALYSIS



Welcome to ***WATERTALK***

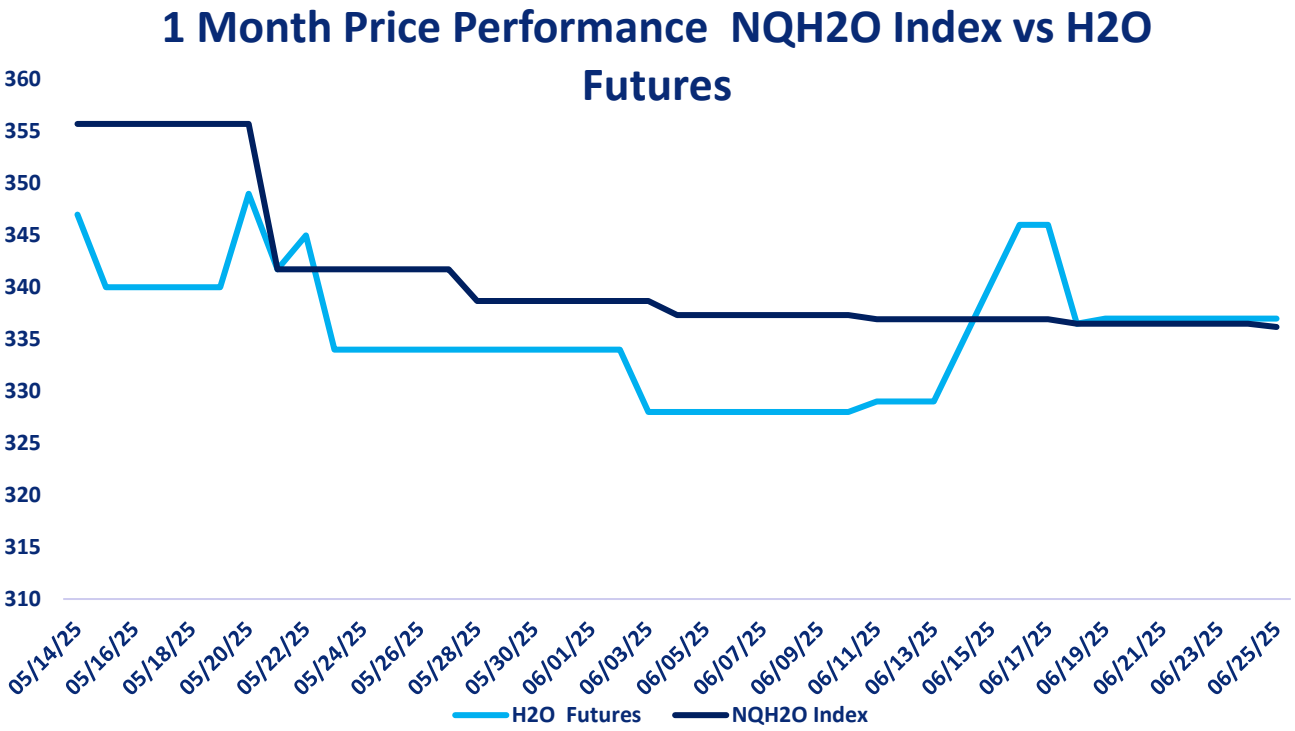
by Joshua Bell

CLICK THE LINK BELOW

"A 2 minute technical analysis video of H2O futures"

https://vimeo.com/1096402834?share=copy#t=0

NQH2O INDEX PRICE vs H2O FUTURES PRICE



Price Chart Based upon Daily Close

The new NQH2O index level of $336.18 was published on June 25th, down $0.31 or 0.09% from the previous week. The July contract is considered the front month. The futures prices closed at a premium of $0.51 to $0.82 versus the index over the past week.

Below are the bid offer prices on different expiries being quoted in the market.

July 25	332@337
Sept 25	320@370
Dec 25	320@420
June 26	400@429

H2O FUTURES TECHNICAL REPORT

Price Action

- **Current Price:** $337
- The index **closed flat on the day (0.00%)**, showing a pause after the previous session's decline.
- The candle formed a **doji-like structure**, suggesting market indecision following recent downward pressure.

Moving Averages Analysis

Short-Term Averages

- **5-day SMA:** 337
- **10-day SMA:** 336
- **20-day SMA:** 333
  Price is currently **resting on the 5-day and 10-day SMAs**. These levels may act as **near-term resistance**; failure to break above them could resume bearish momentum.

Medium-Term Averages

- **30-day SMA:** 338
  Still **sloping downward**, slightly above current price—acting as **dynamic resistance**. The index must reclaim this to initiate a trend reversal.

Long-Term Averages

- **100-day SMA:** 402
- **120-day SMA:** 413
- **150-day SMA:** 415
- **200-day SMA:** 413
  All long-term SMAs are **significantly above the current price and trending down**, confirming a **broad-based bearish trend**. The price remains in a **deep correction phase**.

Stochastic Oscillator (14, 1, 3)

- **%K:** 50.00
- **%D:** 50.00
  Stochastic lines are **aligned and sitting at the midpoint**, signalling a **neutral momentum setup**. A bullish crossover could emerge if the price holds or advances, but current signals lack strength.

Support & Resistance Levels

Key Resistance:

- **338** – 30-day SMA
- **350–354 zone** – psychological and technical cluster
- **367–380 zone** – prior support, now overhead resistance

Key Support:

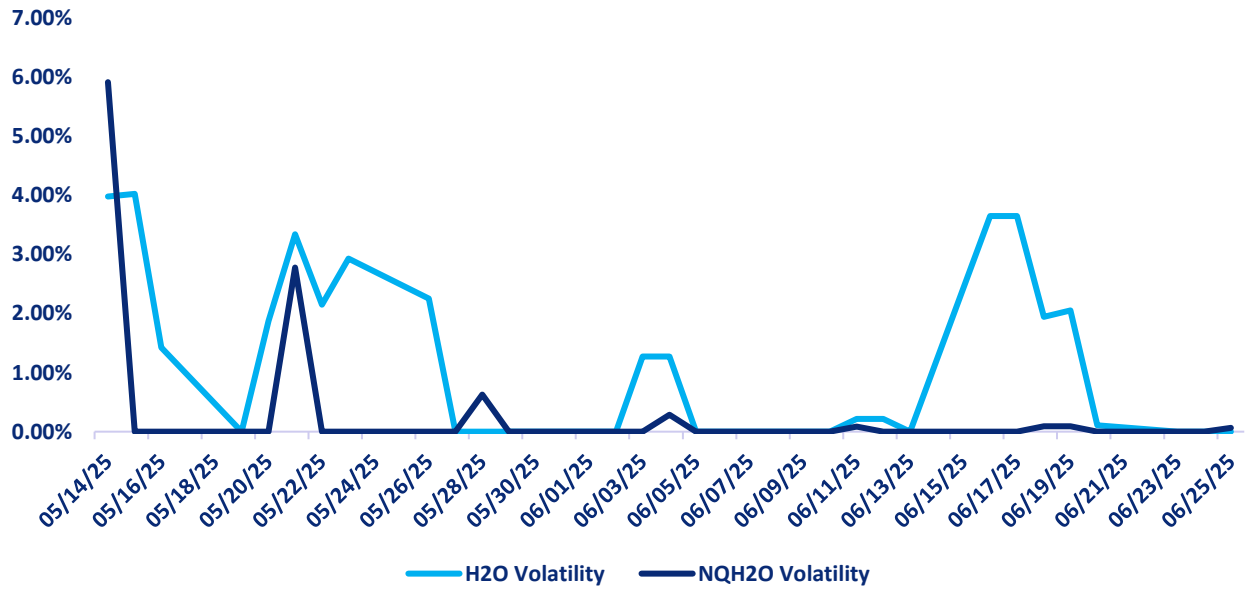
- **325–328 zone** – recent swing lows
- **300** – major psychological level; a breakdown below this may accelerate bearish momentum

Summary & Key Takeaways

- **Short-Term Outlook:** Neutral. Price is stabilizing but lacks conviction.
- **Medium-Term Outlook:** Still bearish below 344. Watch for rejection or breakout at the 30-day SMA.
- **Long-Term Outlook:** Firmly bearish with long-term MAs trending lower and far above current levels.
- **Action Watch:**
  - **Bullish scenario:** A breakout and close above 344 would signal a potential recovery.
  - **Bearish scenario:** Failure at current SMA levels likely leads to retesting 325–328 and possibly 300.

H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



DAILY VOLATILITY

Over the last week the June contract daily future volatility high has been 3.65%.

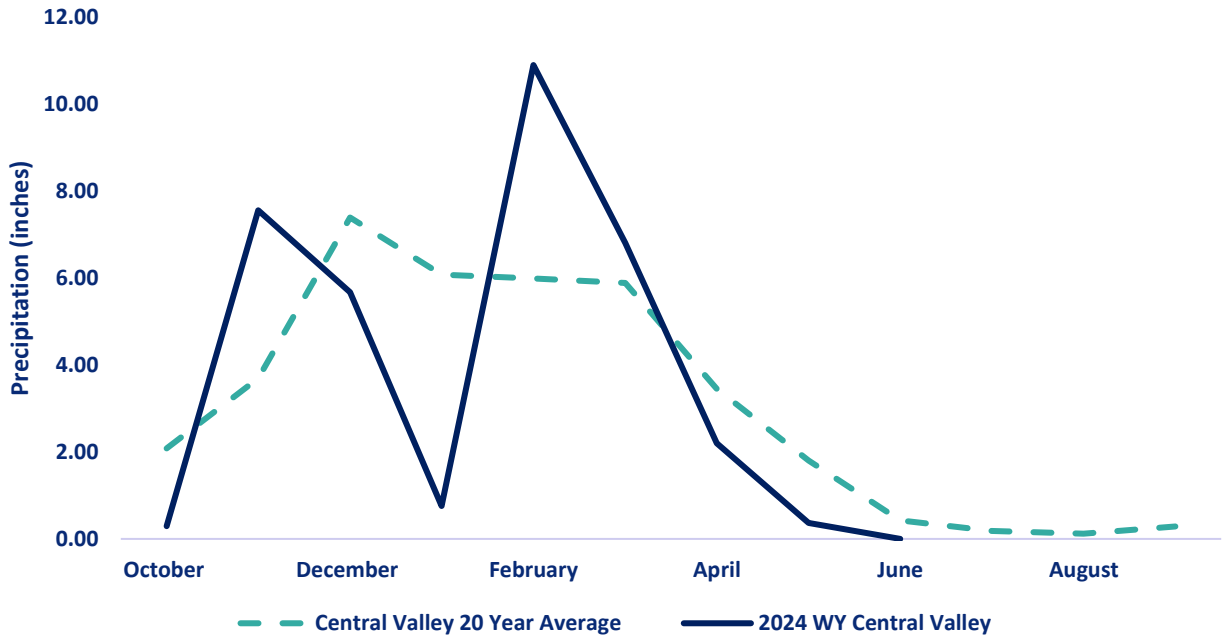
ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	21.11%	8.20%	0.04%	0.04%
H2O FUTURES	N/A	14.07%	7.15%	6.43%

For the week ending on June 25th, the two-month futures volatility is at a premium of 5.86% to the index, down 0.09% from the previous week. The one-month futures volatility is at a premium of 7.11% to the index, up 0.38%. The one-week futures volatility is at a premium of 6.39% to the index volatility.

*The above prices are all **HISTORIC VOLATILITIES**. All readings refer to closing prices as quoted by CME.*

CENTRAL VALLEY PRECIPITATION REPORT

Central Valley Precipitation Index



Central Valley average is calculated using data from 19 weather stations in Central Valley, California.
Data as of 25/06/2025

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2025 WYTD VS 2024 WYTD %	2025 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	0	0	0.00	84	68
TULARE 6 STATION (6SI)	0.08	0.02	45.78	82	83
NORTHERN SIERRA 8 STATION (8SI)	0.01	0	1.29	91	106
CENTRAL VALLEY AVERAGE	0.03	0.01	7.09	86	86

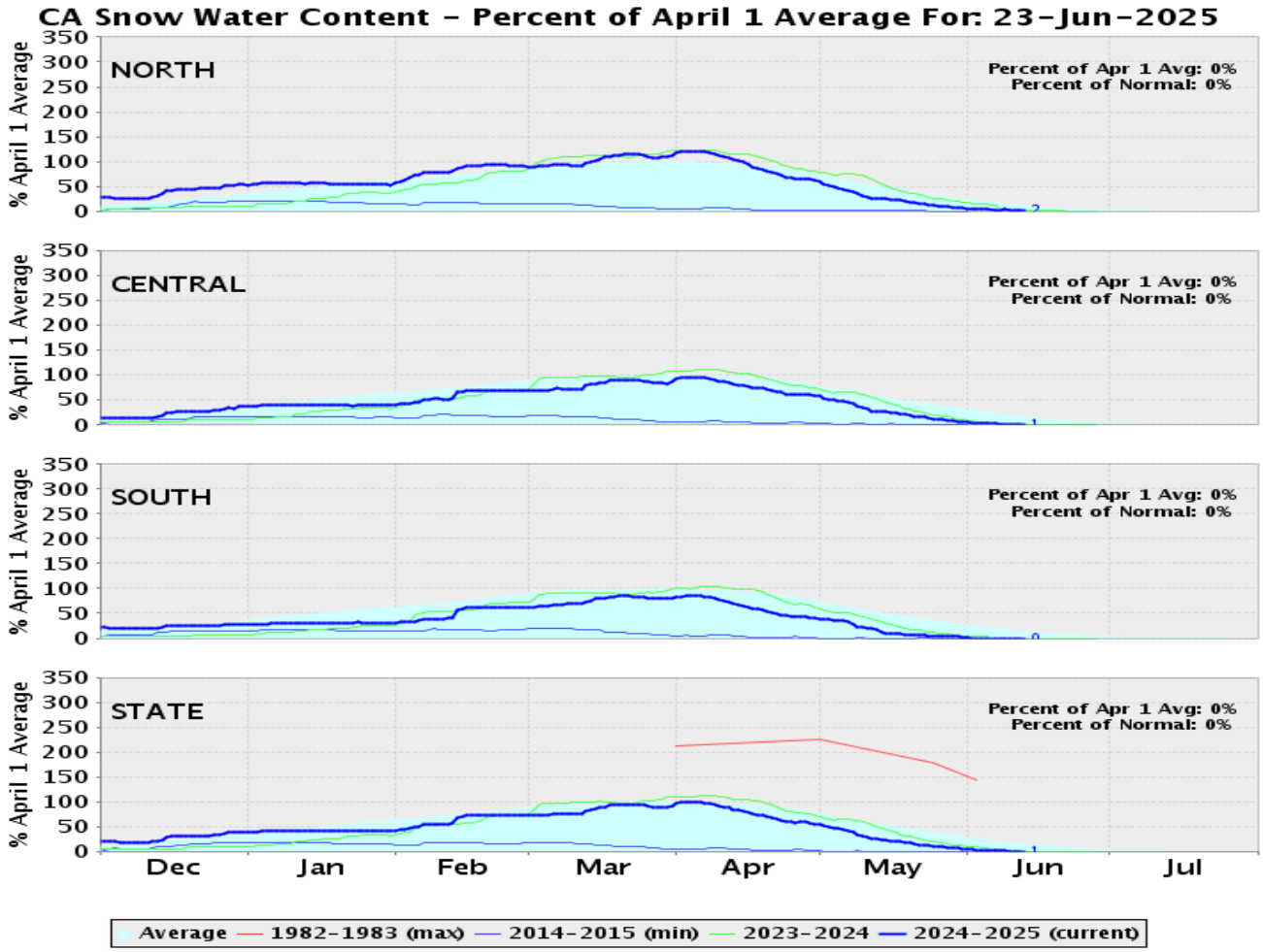
RESERVOIR STORAGE

RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	*% HISTORICAL AVERAGE
TRINITY LAKE	2,229,157	91	85	118
SHASTA LAKE	3,901,946	86	90	108
LAKE OROVILLE	3,304,172	96	100	122
SAN LUIS RES	1,055,713	52	52	90

*% Historical Average is based on a daily average that is interpolated from historical monthly averages. The monthly averages are computed using monthly data from water year 1991 to 2024. The monthly averages are updated every 5 years using a sliding 30 year period.

Reference: California Water Data Exchange

SNOWPACK WATER CONTENT



REGION	*SNOWPACK WATER EQUIVALENT (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF AVERAGE LAST YEAR	% OF 20 YEAR HISTORICAL AVERAGE	% OF HISTORICAL **APRIL 1ST BENCHMARK
NORTHERN SIERRA	0.5	0	18	18	2
CENTRAL SIERRA	0.2	0	6	6	1
SOUTHERN SIERRA	0	0	0	0	0
STATEWIDE	0.2	0	7	7	1

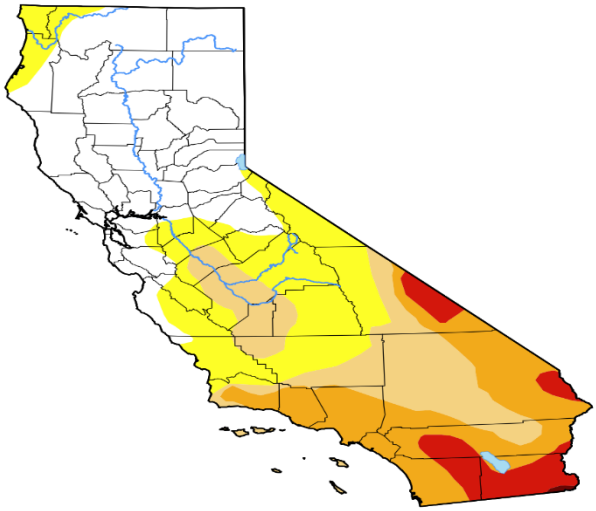
Snow Water Equivalent*, **or SWE**, is a commonly used measurement used by hydrologists and water managers to gauge the amount of liquid water contained within the snowpack. In other words, it is the amount of water that will be released from the snowpack when it melts. SWE has regional variance.**

**** April 1st is used as the benchmark as it when the snowpack in California is generally deepest. It has been used the benchmark date since 1941 by DWR and can be used to predict spring river flow.**

DROUGHT MONITOR

California

Home / California



Map released: Thurs. June 19, 2025

Data valid: June 17, 2025 at 8 a.m. EDT

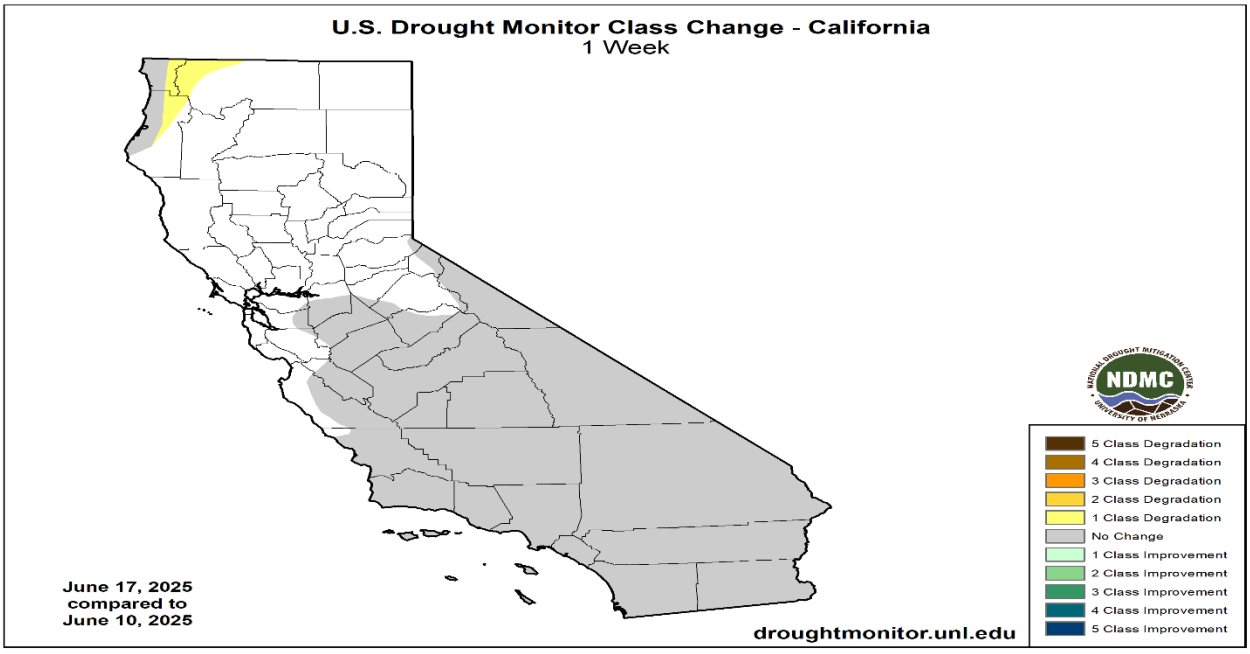
Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):
Brad Rippey, U.S. Department of Agriculture

Pacific Islands and Virgin Islands Author(s):
Lindsay Johnson, National Drought Mitigation Center

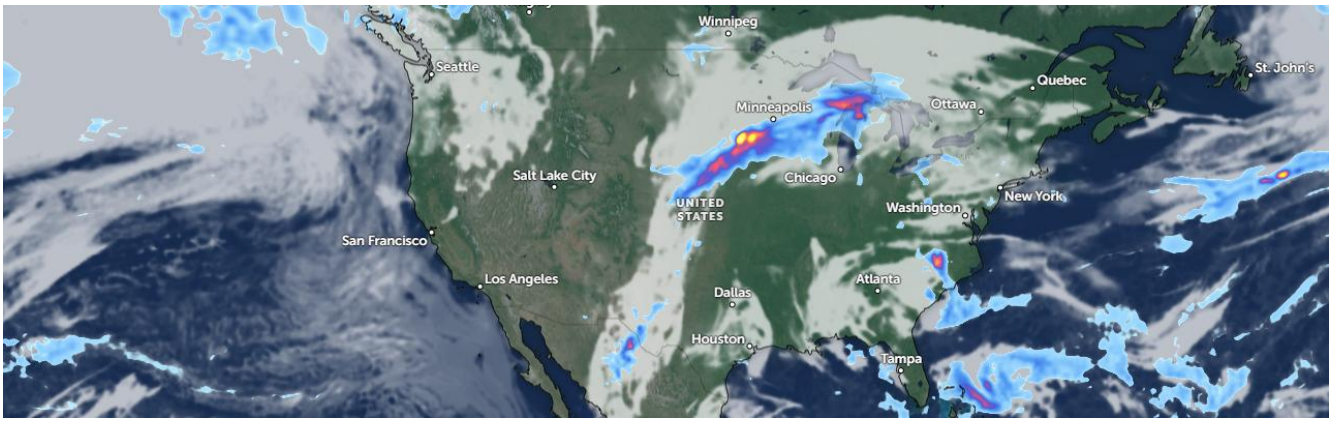


Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2025-06-17	37.73	62.27	39.29	22.98	5.91	0.10	131
Last Week to Current	2025-06-10	39.01	60.99	39.29	22.98	5.91	0.10	129
3 Months Ago to Current	2025-03-18	42.90	57.10	39.81	24.73	11.76	0.73	134
Start of Calendar Year to Current	2024-12-31	40.90	59.10	31.52	5.70	1.06	0.00	97
Start of Water Year to Current	2024-10-01	28.40	71.60	10.67	0.08	0.00	0.00	82
One Year Ago to Current	2024-06-18	98.79	1.21	0.00	0.00	0.00	0.00	1

The U.S Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.

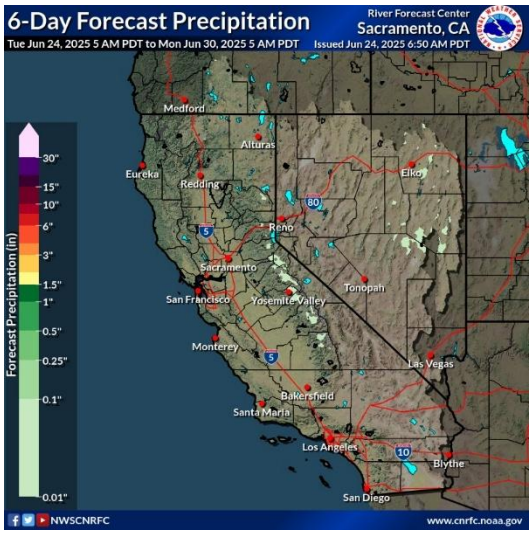
CURRENT SATELLITE IMAGERY

The satellite picture shows moisture inflow from the Pacific in the northwest. For the rest of the US there is a long line of moisture mixed with storms stretching from Mexico northwards to Minneapolis and then bending eastwards to Chicago and the Great Lakes Region moving eastwards. Some scattered summer storms in the Florida and Georgia areas.



Map Ref: Zoom Earth

10 Day Outlook



I By Friday afternoon, the ridge will be firmly overhead with 500 mb heights exceeding 590 dm. This will keep dry conditions over the region and bring well above normal (+10 to +20 deg F) afternoon temperatures. Overnight lows will also be well above normal by similar amounts through Saturday. Many locations across CA are already under heat related products (please see local WFO pages for heat risk/alert information). Into Sunday, a trough will move through the PacNW as the ridge shifts further inland. Troughing will dig into nrn CA/NV as well while the low offshore of Baja finally begins to move inland. This will provide some relief across the region with coastal areas back to near/below normal and afternoon temperature anomalies inland down to about +5 to +15 deg F.

Next week, models have a trough digging into the PacnW from western Canada and closing off into an upper low before potentially heading into CA/NV into Tuesday. There's some disagreement between the models and ensembles on the timing of this as well as the strength of the system, but all four of the 500 mb height ensemble clusters show at least some decent degree of troughing over the area by Tuesday afternoon.

Reference: National Weather Service / California Nevada RFC / Sacramento CA

WESTERN WEATHER DISCUSSION

In contrast to areas east of the Rockies, mostly dry weather dominated the West during the drought-monitoring period. Rapid surface drying and prematurely melting (or melted) snowpack had led to a variety of agricultural and water-supply issues and concerns. The Northwest has been especially dry in recent weeks, with topsoil moisture—as reported by the U.S. Department of Agriculture on June 15—rated 65% very short to short in Montana, along with 56% in Oregon and 45% in Washington. Unlike Oregon and Washington, Montana received some much-needed precipitation in mid-June—but continued to experience agricultural drought impacts. For example, Montana's rangeland and pastures were rated 46% in very poor to poor condition on June 15. Among major production states, Montana led the nation on that date in very poor to poor ratings for spring wheat (28% of the crop) and barley (25%). Meanwhile, among several early-season Northwestern wildfires was the 3,600-acre Rowena Fire near The Dalles, Oregon, which has destroyed more than 150 structures, including several dozen homes.

Reference:

Lindsay Johnson, National Drought Mitigation Center
Richard Tinker, NOAA/NWS/NCEP/CPC

WATER NEWS

CALIFORNIA WATER NEWS

Nearly two-thirds of California is 'abnormally dry.' See where impacts are worst

Nearly two-thirds of California was "abnormally dry" as the state braced for more hot, dry weather and strong winds, according to the U.S. Drought Monitor's latest update. About a third of the Golden State was experiencing "moderate" to "exceptional" drought conditions as of Thursday, June 19, the U.S. Drought Monitor said, with Southern California and parts of the Central Valley getting hit the hardest. The worst impacts appeared to be confined to the southwestern corner of the state.

About 62% of California was considered abnormally dry as of Thursday, according to the U.S. Drought Monitor's weekly report tracking drought conditions across the state. As of Thursday, 39% of the Golden State was under moderate drought conditions and about 23% was in a severe drought, the map showed. According to the drought monitor, about 5.9% of California was in extreme drought conditions and 0.1% was under exceptional drought conditions as of Thursday. About 39% of California was in drought as of Thursday, June 19, 2025, according to the U.S. Drought Monitor's weekly map.

What parts of California are abnormally dry? Parts of California considered abnormally dry included much of central California — including most of San Luis Obispo, Monterey, San Benito, San Joaquin, Stanislaus, Madera, Mariposa and Mono counties, the drought map indicated. Parts of Alameda, Contra Costa, Santa Clara, El Dorado, Alpine, Calaveras and Tuolumne counties were also affected. In the northwestern corner of California, all of Del Norte County and parts of Humboldt and Siskiyou counties are also abnormally dry, the drought map showed. Areas experiencing moderate drought or worse were mostly sound in southern half of the state, including Los Angeles, Orange, San Diego and Ventura counties. Imperial, Riverside and San Bernardino counties were experiencing drought conditions, according to the Drought Monitor. Most of Santa Barbara, Inyo, Kings and Merced counties were suffering from drought conditions along with parts of Fresno, Kern and Tulare counties, the Drought Monitor map showed Thursday. Rice farmer Don Bransford walks past a dry ditch Wednesday, May 4, 2022. More than a third of California was experiencing drought conditions as of Thursday, June 19, 2025.

California sees 'elevated wildfire threat,' water shortages As of Thursday morning, an estimated 22.7 million Californians were living in drought conditions, according to the U.S. Drought Monitor. Recent hot spells and dryness have "manifested in rapidly developing soil moisture shortages, declining prospects for summer water supplies, an elevated wildfire threat, a boost in irrigation demands and increased stress on rain-fed crops," researchers wrote in a weekly national drought summary. Bouts of warm

weather have resulted in the rapid drying and early melting of the snow pack, leading to "a variety of agricultural and water-supply issues and concerns," researchers said. Will California have hot, dry weather this summer?

Hot, dry weather could continue to worsen drought conditions in California in the summer of 2025, early forecasts indicated. From June through August, California is forecast to experience above-average temperatures and lower-than-usual precipitation, according to the Old Farmer's Almanac Summer 2025 weather map. Temperatures are expected to be above normal for most of California for the months of July, August and September, according to a long-range forecast by the National Oceanic and Atmospheric Administration's Climate Prediction Center. Temperatures are likely to lean above average in parts of Southern California, the prediction center said. The Climate Prediction Center forecast indicated that all of California would have "equal chances" of below-normal or above-normal rainfall from July through September.

Original Article: The Sacramento Bee by Hannah Poukish

Cadiz Signs Second MOU for Hydrogen – Solar Development at Cadiz Ranch

Clean energy and digital infrastructure projects at Cadiz expected to generate $7- $10 million per year in lease revenue and water supply sales, in addition to supporting sustainable water and farming operations and data center development.

CADIZ, CALIFORNIA (06.20.25) – Cadiz Inc. (NASDAQ: CDZI) announced today that it has entered into a Memorandum of Understanding with UK-based Hoku Energy Limited and its affiliates (the "MOU" or "agreement") to develop a major clean energy campus at Cadiz Ranch in California's Mojave Desert. The MOU with Hoku represents the second prospective land lease for clean energy development that the Company has executed within the past year and furthers the Company's commitment to sustainable development of its land and water assets.

The MOU provides Hoku Energy with a three-year exclusive option to develop the project on more than 10,000 acres at Cadiz Ranch. The Hoku project could include green hydrogen production facilities, large-scale renewable and low carbon power generation, large scale battery storage facilities, and integrated digital infrastructure, such as data centers, on the leased property or integrated with facilities off the leased property.

The agreement does not restrict existing and planned commercial development at Cadiz, including current agricultural operations, development of the Mojave Groundwater Bank, development of a green hydrogen production facility in partnership with RIC Energy and reserves 400 acres for additional commercial development which could include a data center. Under the agreement, if a data center is developed within this 400-acre area, Hoku Energy will have a right of first refusal to supply power to that facility.

"This agreement with Hoku Energy is the capstone of our long-term land use strategy," said Susan Kennedy, Chair of Cadiz Inc. "Hoku Energy's vision aligns with our mission to support sustainable, scaled development of critical energy and water infrastructure in California and the Southwest."

The Cadiz property's extensive infrastructure—including access to rail lines, water resources, and pipelines and pipeline corridors—makes it well suited for large-scale, integrated renewable energy and data center development. The agreement with Hoku complements Cadiz's development of its flagship water supply and storage project, the Mojave Groundwater Bank, and follows Cadiz's 2024 agreement with RIC Energy to develop up to 3,000 acres for green hydrogen production. Together, the RIC and Hoku projects are expected to position Cadiz Ranch as one of the largest clean energy campuses and green hydrogen production hubs in North America.

Additional details about the MOU are included in a Current Report on Form 8K filed by Cadiz today with the SEC.

Original Article: Cadiz Inc.

Newsom warns that California's water system may be ill-prepared to cope with hotter, drier future

Housing developers left stranded and stalled by a lack of an assured water supply are getting a lifeline under a deal cut between Republicans and Democratic Gov. Katie Hobbs.

The proposal, known as "Ag-to-Urban," allows homebuilders to buy water rights from farmers who retire their agricultural land if they promise to use only a certain percentage of the water to supply new developments.

The agreement was confirmed on June 18 by Sen. T.J. Shope, R-Coolidge, who said GOP lawmakers and Hobbs "think it's the most consequential water bill that's been passed and will get signed since the 1980 Groundwater Act."

The deal immediately affects only Maricopa and Pinal counties, but the Pima County Active Management Area may also fall under its guidance if a moratorium on new water certificates is put in place by state water regulators, Shope said.

If all three areas were included, more than 400,000 acres of farmland could be eligible for conversion. Shope said if half the land were converted from farmland, up to a million homes could be built while saving a huge amount of water.

"The Ag-to-Urban program is a win-win for farmers who are ready to retire but still want to capitalize on their land and for Arizona families looking to obtain their American dream through homeownership," Shope said in a statement.

Still, not everyone is happy.

While big developers are celebrating a win, elected officials in rural Arizona are criticizing Hobbs for backing the proposal without tying it to new protections for groundwater in

their areas. They have been pushing for a way to protect their water supplies for years, but Republicans who control the Legislature have refused to move their proposals.

Mohave County Supervisor Travis Lingenfelter, a Republican who chairs the northwestern Arizona county's board, called it a missed opportunity.

"We really thought that that was the best leverage opportunity that we've seen since the groundwater management code was adopted," Lingenfelter said. "We were disappointed that they let that go."

Hobbs spokesman Christian Slater declined to comment on either the Ag-to-Urban deal or the criticism.

Minority Democrats and Hobbs want additional areas of the state designated as active management areas so that big farms can't move in and pump all the water out of the basins their cities, towns and small farmers rely upon.

The Ag-to-Urban proposal was prompted by a moratorium on issuing water certificates for new developments in western and southeastern parts of metro Phoenix — including parts of Buckeye and Queen Creek — adopted by the state in June 2023.

That moratorium was put in place by the Arizona Department of Water Resources in 2023, with backing from Hobbs, after new data showed there was not enough groundwater in those areas to meet the requirements of the landmark 1980 Groundwater Management Act.

That law requires builders to show they have an assured 100-year supply of water.

The ban on new certificates drew howls of protests from developers and Republican lawmakers who want more development.

Shope has been working on a fix for the past two years and got Republicans who control the House and Senate to pass a version of Ag-to-Urban last year.

But Hobbs vetoed the measure, saying that, while she supported the concept, the bill fell short.

She wrote in her 2024 veto letter that the proposal did not ensure that water would actually be conserved and that homebuyers were not guaranteed that there was enough water for 100 years. Hobbs also said the concept should not be adopted statewide because differing supplies in each of the state's four initial active groundwater management areas required a more nuanced approach.

Shope introduced a different version early this year but it has been stalled amid negotiations with the governor.

"My hope is that it's completely bipartisan," Shope told Capitol Media Services.

He said the Senate was expected to vote on the proposal on June 19 and send it to the House. If it passes as he hopes, it could be on Hobbs' desk by the end of the week.

Shope cited data from the Arizona Department of Housing which estimates there is currently a shortage of 270,000 housing units statewide. That, in turn, is driving up

housing prices, saying the average median home sale price in Arizona has increased more than 50% in the past five years.

All that, however, still does nothing for the rural residents who are worried that large corporate farms will drain their regions of water.

Willcox Mayor Gary Hancock said he was frustrated by the failure of the governor to push for new protections for rural areas.

“We’ve got a lot of people out here in rural Arizona that need this water too,” Hancock said. “It’s hard to see the focus shift away from us.”

Lingelfelter, the Mohave County supervisor, said a coalition of counties in the northern and western part of the state have teamed up to try to break the logjam on rural groundwater.

“Collectively, we represent almost 650,000 rural Arizonans that don’t have any water security at all,” he said. “We were really hoping that this was going to be the year that all the leverage was used, and we got something finally passed for our citizens.”

Original Article: AZ Capitol Times by Bob Christie

US WATER NEWS

Research recommends several legal reforms to preserve groundwater in southwest

If you live in the Southwest, you've likely heard the grim warning: water is in short supply. Due to rising temperatures, increased water demand, and relaxed regulations, the Western United States is facing a critical situation. This is why a University of New Mexico law professor has been focusing her research on protecting Western groundwater. Warigia Bowman, who teaches water law at the School of Law, emphasizes that time is running out.

“We either make changes, or we run out of water. I would say the situation is dire, but it’s fixable,” Bowman said. “If we don’t make changes by the end of the century, places will run out of groundwater. While not every aquifer will run out, many will. The next 50 years represent a critical period for making changes in policy, law, technology, and farmer and citizen behavior.”

With reduced water levels in the Colorado River and insufficient precipitation west of the 100th meridian, farmers are increasingly relying on groundwater. According to Bowman, there are areas in the West where wells have already run dry. Dry wells indicate that groundwater aquifers are depleted. Groundwater depletion represents a serious concern, since groundwater is the best source for drinking water. This raises the question: Are we utilizing our water resources effectively?

In her article *Surviving the Megadrought*, published in the Ohio State University Law Journal, Bowman recommends four regulatory solutions to preserve

groundwater. While these changes alone will not solve the problem, she says these changes are a helpful step in saving some of our precious water.

1. Refining the doctrine of "safe yield."

Safe yield refers to the optimal amount of water you can withdraw from an aquifer without adverse economic and environmental impacts. Bowman says there are several reasons why we need to make the doctrine more precise. First, different states have different definitions of what safe yield should be. Second, we don't have enough data on how much water is in some aquifers. Lastly, there is no time limit on the safe yield concept.

"A year, five years, 10 years? If we add time to its definition, it would be helpful so we could say we went to maintain this amount of groundwater, and we're going to measure aquifer levels frequently to ensure that we are meeting water conservation goals," she said.

2. Eliminating "exempt" domestic and livestock wells while requiring permitting and withdrawal limits for all wells.

In most western states, domestic or livestock wells are often not required to be metered (track their water usage) unless you're in a critical zone. These wells are also often not permitted. Bowman says it's time to change that and require metering and permits for all wells to track usage and put limits on withdrawal amounts.

"The idea was back in the day people weren't going to use that much water, but in the absence of accurate measurement, water use from domestic and livestock wells could be overdrawn," she said. "It's possible someone could have one of these wells and use far more water than the Office of the State Engineer allows, and with an absence of meters, there's no way to enforce it."

3. Providing incentives for metering and a move toward mandatory metering.

While some areas across the country are not metering, many are. States like Arizona meter in their big cities, but not in other parts of the state. Bowman's article says we should move towards metering everything, everywhere. "If we had heavy metering in every aquifer or well, we'd have great data on how much is being pumped out," she said. "Maybe farmers don't like metering, but they will like metering more than they like having no water."

That is why Bowman says an incentive to meter could go a long way. She recommends giving a tax break to farmers who agree to meter or providing them with another form of financial incentive, such as capital loans on water-saving equipment. Another option could be to make metering mandatory, which is going to be less popular and likely to

result in resistance. Nonetheless, if aquifers begin to run dry, they may have to be closed completely to withdrawals. Taking preventative measures in the present will prevent more draconian measures in the future.

4. Eschewing a patchwork approach in favor of comprehensive and strict state groundwater regulation.

Bowman argues that instead of letting local areas have their own set of voluntary groundwater rules, every state should implement stronger and more consistent sets of regulations that apply statewide. Reminder: water is controlled at the state level (quantity and who owns it).

"We need consistent control throughout the entire state, and western states need to harmonize their approaches at a regional level," Bowman said. Aquifers cross multiple state lines. These ancient formations do not honor recent human-made boundaries.

Original Article: UNM News by Alexa Skonieski

Colorado River 'water market' could bring security to farmers, fish and families: Study

Applying a market-based approach to Colorado River management could ensure more robust and reliable supplies for farmers, communities and the environment, a new study has found.

Without considerable cutbacks in basin-wide water consumption, fish populations could face dire consequences for at least one month of the irrigation season, scientists warned in the study, published Friday in Nature Sustainability.

But if action were taken to deploy strategic water transactions among the basin's stakeholders, resultant reductions in usage could improve the situation of more than 380 miles of restorable segments, per the research.

"By strategically directing river water to the right places, even under drought conditions, fish can be saved with targeted restoration at nominal additional cost," said senior author Steven Gorelick, a hydrologist at Stanford University, in a statement.

The 1,450-mile Colorado River provides drinking water and agricultural irrigation to about 40 million people across seven U.S. states, 30 tribal nations and two states in Mexico. On the domestic side, the region is divided into the Upper Basin — Colorado, Wyoming, Utah and New Mexico — and the Lower Basin — California, Nevada and Arizona.

As the West becomes increasingly arid and a growing population consumes more water, this critical transboundary artery is dwindling. Meanwhile, the U.S. basin states are currently negotiating an update to the river's operational guidelines, which expire at the end of 2026.

Stakeholders across the region adhere to a century-old Colorado River Compact that allocated 7.5 million acre-feet annually to each of the two basins. The average suburban household consumes about half an acre-foot of water per year.

Also at play is a historic U.S. West "water rights" system, a "first in time, first in right" approach to water that stems from the mid-19th century homesteading and gold rush era. At the time, farmers and miners secured and diverted water according to their arrival, rather than their geographical position along the river — creating a prioritization structure that is still in effect today.

But the authors of Friday's study stressed that climate change has since exacerbated the Colorado River's shortages, noting that recent research has indicated that the artery's flows are at their lowest in at least 2,000 years.

"Given the overallocation of the river water, we explored how the needs of people and the environment can both be served," Gorelick said.

With the goal of compensating for potential cutbacks, water users in the Lower Basin states have created systems for voluntary water market transactions, the authors explained.

Original Article: The Hill by Sharon Udasin

Why electricity production is at risk at both huge Colorado River reservoirs

The Colorado River Basin faces the possibility of two big reservoir crises at once.

By the end of next year, the worst-case forecast has Lake Powell falling to low enough levels to halt electricity production at Glen Canyon Dam. At Lake Mead, a similar forecast has water levels falling low enough by April 2027 to possibly severely curtail power production at Hoover Dam.

If both those events happen, cities, irrigation districts, tribes and other water users throughout the seven-state basin would have to find other power sources, most likely at a sharply higher cost. Among them is the Central Arizona Project, which uses power from Hoover Dam to pump water uphill through its canal system to Phoenix and Tucson for drinking.

The impact of higher rates in Arizona would be particularly acute for Hoover Dam customers. They include the city of Tucson government, about 19 other cities, a number of electrical districts providing power for farms, and a couple of tribes.

For all of them, the curtailment of power production could mean a 30% to 40% increase in the rates they pay to the feds for the power, said Jordy Fuentes, director of the Arizona Power Authority, a state agency that markets Hoover Dam power across Arizona.

Most cities and CAP get only a fraction of their power from Hoover Dam. But farmers and the electrical districts serving them are more dependent on the dam.

Between them, the turbines at the two dams have historically produced enough electricity to serve 13 million people across the seven basin states, although their power

production has already been cut somewhat because of existing declines in water levels at the two reservoirs.

In the case of Glen Canyon Dam, the decline in reservoir levels below what's known as "minimum power pool" at 3,490 feet elevation could also reduce the flow of river water through the dam into the Lower Basin states of Arizona, California and Nevada.

That's because if Lake Powell falls that low, all of the river's water would have to then start passing through four steel outlet tubes instead of the dam's turbines, and U.S. Bureau of Reclamation officials have said those tubes aren't designed to carry large amounts of water.

The worst-case forecast has Lake Powell falling to low enough levels by the end of next year to halt electricity production at the Glen Canyon Dam.

Kelly Presnell, Arizona Daily Star, File 2022

The specific water level forecasts for the two reservoirs come from the reclamation's latest monthly 24-month study. It predicts the water levels over the coming two years for 15 reservoirs in the basin, from Fontanelle Dam in Wyoming south to Lake Havasu along the river in western Arizona.

Specifically, the bureau's "most probable" forecast, which covers 80% of all possible river flow and reservoir levels, doesn't predict problematic levels for Powell or Mead over the next two years. But the "minimum probable" forecast shows Powell falling below 3,490 starting in December 2025 and staying there through May 2027 — as far out as the forecast goes. For Mead, that same forecast shows it falling below 1,035 feet, the level at which its power production may have to be curtailed, in April and May 2027.

Research led by longtime Colorado River scientist Jack Schmidt at Utah State University has found the bureau's most probable forecasts have often been too optimistic, and numerous water experts have said it's important to look at the worst-case scenario in planning for river management.

The possibility of Powell falling below the minimum level for power production is a familiar scenario in the basin. Through much of 2022, the last year of a three-year dry spell, forecasters were regularly predicting the lake would fall below 3,490 by 2024, and possibly fall to "dead pool" at 3,370 feet, a level at which no water could be released through the dam. In 2021, the bureau cut its releases from Powell to Mead to prop the lake up — a cut that a bureau official said may well need to be repeated next year if it looks like Powell will fall below 3,490 feet.

The dire forecasts never came to pass, because extremely heavy snows in 2023 raised the reservoir levels well above the danger zone for a decline. But this year, runoff levels into Powell are again forecast to be very low — about 45% of normal, says the federal Climate Prediction Center. The possibility of Powell dropping to 3,490 comes after only one dry year this time.

"This is one of the five driest years on the river over the past 50 to 60 years," Dan Bunk, a bureau official, told a state-run Colorado River committee at a meeting Tuesday, although "it's not quite as bad as 2022."

At Lake Mead, however, officials thought they had the Hoover power situation under control after they installed five new turbines at the dam a decade ago. Until then, it was believed the dam would stop generating electricity when Lake Mead fell to 1,050 feet elevation — only five feet lower than it was on Friday. But since the turbines were installed, officials had, until very recently, said the dam could keep producing electricity until Mead fell to 950 feet.

But at Tuesday's meeting of the Arizona Reconsultation Committee, the bureau's Bunk said a study by a technical services team at the bureau found if Mead falls to 1,035 feet now, the dam's older 12 turbines may not be able to operate. That's because at that elevation, the turbines may suffer damage from cavitation, he said.

Cavitation occurs when bubbles get into a liquid, and becomes a problem when it is associated with flowing water. The air bubbles in the moving water implode and create shock waves that travel through the liquid and damage equipment. The result is erosion, outside water experts have told the Star.

If Mead drops that low, "we may have to take 12 of our 17 turbines offline," said Bunk, area manager for the bureau's Boulder Canyon operations office. "That would be a drop in our capacity from 1,280 megawatts to 380 megawatts."

At Hoover, "full capacity is 2,000 megawatts," the power authority's Fuentes said. "We're already operating at 65% capacity. (Taking the older generators offline) takes it down to 30%."

"We're probably now up 25% in rates from when the dam was full. If we project to 380 megawatts, we're probably talking about another 30-40% increase in rates," Fuentes said.

Bunk told the Arizona committee that the bureau is working with Hoover power customers and the Western Area Power Administration to analyze the possible benefits of installing additional new turbines at the dam to replace the older ones.

"What we're hearing is it could take potentially three years to install the new turbines," Fuentes said. "The best case scenario is 2.5 years, probably. Realistically, we're looking at some sort of phased-in approach.

"Ultimately what that is gong to mean is that if (the lake falls to 1,035) that quickly, and there's no way other turbines will be in place by then, we will need additional energy conservation," he said.

Original Article: Tucson.com by Tony Davis

Arizona water chief: Release Colorado River water based on what's there

Arizona's water chief is offering a new path out of the morass in Colorado River negotiations — a proposal to tie future water releases from Lake Powell to Lake Mead on what's actually in the river, rather than what forecasters predict will be there or century-old allocations said should be there.

Tom Buschatzke's proposal would base annual releases from Powell to the three Lower Colorado River Basin states — Arizona, California and Nevada — on a fixed percentage of the average amount of "natural flow" down the river over three years.

It offers a radically different — and to some observers, more sustainable — method for how to determine the annual releases compared to traditional methods that the states and federal government have relied on for decades. Those methods have been held by many scientists to be directly responsible for the basin's failure to bring water use in line with the shrinking supply.

In the long run, Buschatzke's proposed method is more likely to protect the river's health and lead to a balance of its supplies with demands, said Eric Kuhn, a longtime river researcher, and David Wegner, a former longtime U.S. Bureau of Reclamation official.

The amount of water allocated for sending to the Lower Basin and for being kept in the Upper Basin would be calculated over a shorter time frame and be more reflective of real-time water supply data, said Wegner, who sits on a National Academy of Sciences advisory board on water issues.

The key to the plan's success, however, will be what percentage of the available supply averaged over three years is made available for allocation to both basins, he said. That percentage would have to be negotiated by all the states before it's formally set.

"If the percentage made available for allocation to the states is too high, the demand will take more water than is sustainable," Wegner said.

The proposal is also seen by some outside water experts as a potential fix if not a breakthrough for the protracted, stalemated negotiations between the three Lower Basin states and the four Upper Basin states — Colorado, New Mexico, Utah and Wyoming — over how to match water demand with supply.

It's also the first proposal that's been discussed in the long-private negotiations to become public in some time. Buschatzke, director of the Arizona Department of Water Resources, made the proposal public Tuesday at a meeting in Phoenix of an advisory committee that is helping ADWR come up with solutions to the river's ongoing water crisis, including gaps between supply and demand.

The idea has received generally positive reactions from outside experts and one Colorado water official, although key details remain to be worked out, and that won't be easy.

"It presents an attractive alternative to the increasingly baroque and unproductive s—-show that had taken over interstate negotiations," New Mexico-based water researcher and author John Fleck posted last week on his influential Inkstain blog.
So far, there's been no public opposition from any of the four Upper Basin states. A representative of one of them, Colorado, seemed at least cautiously receptive to it in a statement Friday to the Arizona Daily Star.
It's also seen by many observers as a way out of the dispute now brewing between the two basins' water officials over whether the Upper Basin states will soon be in violation of the 1922 Colorado River Compact's requirements to deliver a minimum amount of water over 10 years to the Lower Basin. If Buschatzke's plan was adopted, that issue would be placed on indefinite hold.
CAP director's warning
That could be a timely move, because at Tuesday's committee meeting, Central Arizona Project General Manager Brenda Burman warned that by the end of 2026, the Lower Basin states may for the first time receive less river water over 10 years than the 82.5 million acre-foot minimum release of water they say the compact requires the Upper Basin states to send them.
The Upper Basin states sharply dispute the argument that they must release 82.5 million acre-feet over 10 years. They say they won't be in violation in any case because the compact only requires them not to deplete the river. They blame depletion on climate change, not their own water use.
But Berman warned that in 2027, the Upper Basin releases could fall further behind what's needed to meet compact rules, unless the Upper Basin sends down 9 million acre-feet from Powell to Mead — an amount the Lower Basin states haven't received in years. If the release is 8.23 million acre-feet, "the compact will not be met. We drop below that line. And anything less than (8.23 million) leads to a more marked deviation from where we feel we need to be.
"This projected deficiency is important for us to understand. There is a lot we think needs to happen to prevent that. We are all trying to take on risk in this basin to find a settlement, so we can all continue to thrive," said Burman, a former U.S. Bureau of Reclamation commissioner.
Original Article: Tucson.com by Tony Davis

Texas plans multi-billion-dollar investment to confront rising water shortages

Texas officials are asking voters to approve a $1 billion-per-year initiative to fund water projects as the state faces mounting pressure from drought, aging infrastructure, and rapid population growth.
Brady Dennis reports for *The Washington Post.*

In short:

- Governor Greg Abbott signed a bipartisan legislative package that will place a $20 billion water infrastructure investment referendum on the November ballot, starting in 2027 and funded through sales tax revenue.
- The plan includes both new water supply projects — like desalination and aquifer storage — and repairs to crumbling infrastructure, wastewater systems, and flood protections, with an additional $2.5 billion already earmarked for a state water fund.
- A report from policy group Texas 2036 warns that even this substantial investment falls short, estimating the state will need at least $154 billion over the next 50 years to secure reliable water access.

Key quote:

"We've got to plan decades out in order to be able to have the water supply for those generations of the future."

— Cody Harris, state representative

Why this matters:

Water demand in Texas is surging as its population grows by more than 1,000 people a day and energy-intensive industries like data centers expand across the state. Yet, aging infrastructure and a history of underinvestment have left many communities vulnerable to dry taps, water main failures, and drought-related crop losses. Climate change is amplifying the stress, with longer, hotter dry spells depleting reservoirs and shrinking river flows. The risk isn't limited to rural farmers or small towns — cities and economic hubs face escalating threats, too.

Original Article: EHN

Trump admin eyes Mojave Desert groundwater as potential source for arid Arizona

The situation on the Colorado River — the water supply for 40 million Westerners and half of all Californians — is dire. The waterway's flows have shrunk 20 percent since the turn of the century and climate scientists say it's not unreasonable to think that another 20 percent could be lost in the coming decades.

To cities, farmers, tribes and industries from Wyoming to Mexico — but especially in legally vulnerable Arizona — that looks like pain.

To the Los Angeles-based water company Cadiz Inc., that looks like opportunity.

After trying and failing for more than two decades to pump ancient groundwater from beneath the Mojave Desert and sell it to Southern California water districts, the controversial company has set its sights on new customers over the border in the Grand Canyon State.

Original Article: E&E News by Annie Snider and Camille von Kaenel

GLOBAL WATER NEWS

Improved Groundwater Quality Indicator Reveals A Mixed Picture Of New Zealand's Aquifers

Groundwater is water stored underground in aquifers layers of water-bearing rock or sand. It is commonly accessed through wells and can also emerge naturally through springs.

An improved groundwater quality indicator, with more comprehensive data, additional measures, and refined methodology, has been released by Stats NZ today.

"This release has greatly improved data coverage, helping us better understand the current state of groundwater and how it's changing over time," environment statistics spokesperson Tehseen Islam said.

"It's a step forward in how we assess and report on groundwater quality."

Groundwater is water stored underground in aquifers – layers of water-bearing rock or sand. It is commonly accessed through wells and can also emerge naturally through springs.

Groundwater plays a crucial role in supporting rivers, lakes, and wetlands, and supplies drinking water to nearly half of New Zealand's population.

Original Article: Business Scoop by Stats NZ

Irrigators to receive 100 per cent of their River Murray allocation for fifth year running

For the fifth successive year, South Australian River Murray water users will start the 2025-26 water year with 100 per cent of their allocation, highlighting the successful management of the resource under both state and federal Labor.

Allocations will be issued for use from 1 July 2025 and irrigators will start the financial year with full allocations.

The good news comes as the State Budget provided $71.1 million over three years for River Murray constraints measures which remove barriers to the delivery of environmental water to floodplains and wetlands.

The Budget also contained a further $20.9 million over three years for councils to reduce the reliance on River Murray water by investing in alternative water resources and infrastructure.

A recent assessment of environmental outcomes in South Australia under the Murray Darling Basin Plan shows environmental water is having a positive impact on ecosystems, biodiversity and habitat quality.

This includes increasing connectivity of wetlands and floodplains which has improved outcomes for native freshwater fish, vegetation and waterbird species.

The report also emphasises the need to recover the 450GL of environmental water as soon as possible, and from the southern Basin, to maximise environmental outcomes across the system, including increasing resilience to climate change.
In line with the Water Allocation Plan for the River Murray Prescribed Watercourse, irrigators will not be able to carryover unused water from the previous year as the projected minimum opening allocation announced on 15 April 2025 was greater than 50 per cent.
As the opening allocation is 100 per cent, no more allocation announcements are scheduled for the 2025-26 water year.
The next allocation announcement will be a projected minimum opening allocation for the 2026-27 water year, which will be made on 15 April 2026.
Original Article: Gov. South Australia

Advancing Africa's water security through collaboration

The University of Zululand and Chang'an University had the privilege of hosting the 2025 International Conference on Water Security and Sustainable Development.
The three-day prestigious conference (23rd to 25th May 2025) brought together leading scientists, policymakers, industry experts, and stakeholders from around the world to address one of the most pressing challenges of water security. According to the United Nations, over two billion people live in water-stressed countries.
The effects of climate change have led to a reduction in freshwater availability and climate-induced variability, resulting in an increase in drought in some regions and floods in others.The diverse participant base underscores a global commitment to advancing scientific understanding to formulate practical solutions.
This much was evident from an array of topics that were covered. These ranged from presentations on geothermal systems, climate change impacts, groundwater quality, depletion, and sustainability to antibiotic resistance in mining-affected waters.
The conference also touched on agricultural water management and general water resource management.To this end, the conference provided "a vital platform for sharing cutting-edge research, innovative solutions, and collaborative strategies to enhance water security, improve governance, and promote adaptive management to promote sustainable development."
With expertise from a myriad of backgrounds from every continent, the conference lived up to its sub-theme of "Collaboration Makes the World Better." The benefits of such collaboration are multifaceted.
First, environmental challenges such as water scarcity, droughts, and floods, which cut across narrow disciplines, can be resolved by instituting multidisciplinary and transdisciplinary approaches.

Collaboration enables the sharing of data, technologies, and best practices. This is particularly true if one considers that many local solutions have global applicability. Scientific collaboration facilitates knowledge transfer. Fragmented efforts have proven to be costly and inefficient.

Through collaboration, nations are thus able to pool together resources in the form of expertise and technology. Closer to home, the paper "Ensuring the Sustainability of Groundwater Resources in Africa" by Professor Godfred Darko from the Kwame Nkrumah University of Science and Technology in Ghana underscores the importance of scientific collaboration in addressing practical, existential challenges.

Africa, the second-largest continent (30.4 million km²) and second-most populous (1.55 billion in 2025), with a young population, is known for its abundant natural resources. While more focus has been on its surface water systems, less is known that it is also richly endowed with vast groundwater resources.

As a result, Africa is generally presented as a water-scarce continent.Africa's surface water of 1,170 km³ with over 1,270 dams storing ~20% of available water compares poorly with its groundwater capacity of over 660,000 km³. This translates to more than twenty times the water in lakes. Groundwater provides massive opportunities for sustainable development. African countries use less than 10 per cent of renewable groundwater.

Water security challenges to be managed include pollution from agriculture, industry, domestic sources, weak transboundary management, and governance structures. These challenges can be addressed through the integration of structures such as the African Union and the African Ministers Council on Water. Groundwater is critical for drinking, irrigation, and ecosystems. Its sustainability would require governing structures to ensure enhanced monitoring, pollution management, and research into sustainable practices.

The Xi'an conference was a prelude to the 3rd International Conference on Earth and Environmental Sciences (ICCES-2025) earmarked for the 17th to 20th August 2025 in Durban.

The Durban meeting has already attracted over 600 participants comprising scientists, industry experts, and policymakers. Represented will be more than 70 countries from Asia, Africa, North America, South America, Europe, and Australia.

UNIZULU's hosting of international conferences is part of a broader strategy of transforming itself as an authentic African university, as opposed to a university in Africa. To this end, it has decidedly branded itself as A Node of African Thought. In partnering with the best players in the world, UNIZULU rejects the colonial and apartheid hierarchisation of higher education that continues to bedevil most of the country's public discourse.

Such a posture enables the university to chart its path of development. Instead of mimicking and following others, it has chosen to be a pathfinder. To this end, UNIZULU has made enormous progress in inculcating university-wide consciousness of African Thought.

When it comes to development, one cannot be a visitor to China without marvelling at the remarkable strides it has made in terms of its investment in socio-economic development. In forty years, China has reportedly achieved a miraculous feat of lifting about 800 million people out of absolute poverty.

Its investment in both science and technology has propelled it to become the second-largest economy. China has redefined the scale and speed of technological limits. In doing so, it has rewritten the global engineering playbook. There are innumerable lessons for Africa. The most important being that China's achievements are not despite its challenges but because of them.

Original Article: The African by Prof. Sipho Seepe

How England's outdated water tracking system leaves regulators in the dark

Demand for water is rising fast but England's system for tracking water use is outdated, patchy and opaque, leaving regulators in the dark, and can even reward businesses for using more, experts have warned.

Water licensed for farming has more than doubled in five years, from nearly 3 billion cubic metres in 2015–2019 to almost 6 billion between 2020 and 2024. The energy sector's use has also soared, with the sector's annual demand rising from 4.1 billion cubic metres in 2013 to 7.3 billion in 2023, a joint investigation by the Guardian and Watershed Investigations revealed.

Part of the rise reflects previously unlicensed activities now entering the system. The Crown and Government category, which includes the Ministry of Defence, had no recorded volumes before 2021, but by 2023 had reached nearly 3 million cubic metres.

Some water use is classed as non-consumptive, such as navigation or power station cooling, because it is returned shortly after use.

Currently, large parts of England are officially classed as water-stressed by the Environment Agency. The north-west and Yorkshire are already in drought.

Neil Entwistle, professor of river science and climate resilience at the University of Salford and head of science at Rebalance Earth, is watching his local reservoirs vanish. "This time last year, they were 86 to 91% full. Now they're half-empty," he said.

Water use varies sharply across England. In the Midlands, 72% of abstraction is for energy. In the north-west, industrial and commercial users dominate, accounting for 62%. In the Anglian and Thames regions, public water supply is the biggest user according to the analysis of abstraction licences.

But the abstraction licence system was “designed for a completely different era,” said Entwistle. “Back then, abstraction looked very different. The population was smaller, demand was lower, and the system worked for the time. But we’re now living in the digital age and we haven’t kept up.”

There are significant gaps in accounting for who is using water and in what quantities. Many users are not required to report their water use, and those taking under 20 cubic metres a day – enough for 140 people – do not need a licence.

“Twenty cubic metres a day is a lot of water,” said a water industry insider. “That’s roughly two-thirds of a large tanker, every single day. It really should be tracked.”

Entwistle says shrinking budgets have made things worse: “The government has cut funding to the Environment Agency and Natural England over the years. That means fewer checks and more opportunities for people to manipulate the system.”

An Environment Agency officer confirmed that many licences, especially in agriculture, go largely unchecked and when they do “we just have to take people at their word”.

Although Environment Agency inspections have recently increased, the officer said: “Most inspections are pointless … no one knows what’s really being used … If a farmer says they’ve used one litre all year, we wouldn’t be able to prove otherwise.”

Technology could close this gap. “There’s no reason you couldn’t have a live-based system showing what’s being extracted to the nearest 15 minutes … the technology is there,” said an industry expert. “But I get why a farmer might not want to pay £3,000 to £4,000 to install a monitor that needs power, telemetry, maintenance and someone to check it every few years … it would feel like a real burden.”

There are other problems with the system. Some licences, many issued decades ago, permit volumes far higher than would be approved today. Others have no expiry dates or set volume limits at all.

Original Article: The Guadian by Rachel Salvidge

India says it will never restore Indus water treaty with Pakistan

India will never restore the Indus Waters Treaty with Islamabad, and the water flowing to Pakistan will be diverted for internal use, Home Minister Amit Shah said in an interview with Times of India on Saturday.

India put into "abeyance" its participation in the 1960 treaty, which governs the usage of the Indus river system, after 26 civilians in Indian Kashmir were killed in what Delhi described as an act of terror. The treaty had guaranteed water access for 80% of Pakistan's farms through three rivers originating in India.

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Pakistan has denied involvement in the incident, but the accord remains dormant despite a ceasefire agreed upon by the two nuclear-armed neighbours last month following their worst fighting in decades.

"No, it will never be restored," Shah told the daily.
"We will take water that was flowing to Pakistan to Rajasthan by constructing a canal. Pakistan will be starved of water that it has been getting unjustifiably," Shah said, referring to the northwestern Indian state.
The latest comments from Shah, the most powerful cabinet minister in Prime Minister Narendra Modi's cabinet, have dimmed Islamabad's hopes for negotiations on the treaty in the near term.
Last month, Reuters reported that India plans to dramatically increase the water it draws from a major river that feeds Pakistani farms downstream, as part of retaliatory action.
Pakistan's foreign ministry did not immediately respond to Reuters' request for comments.
But it has said in the past that the treaty has no provision for one side to unilaterally pull back and that any blocking of river water flowing to Pakistan will be considered "an act of war".
Islamabad is also exploring a legal challenge to India's decision to hold the treaty in abeyance under international law.
Original Article: Reuters

Blue bonds: Sustainable financing for the Blue Economy around the Indian Ocean

Since the last few years, there has been a rapid increase in the issuance of sustainability-linked financial products, such as Green Bonds . In parts of the world with large marine and coastal ecosystems, such as nations around the Indian Ocean, the usage of Blue Bonds is becoming increasingly popular, aiming to develop and build a Blue Economy . The governments of the Seychelles and Indonesia, for example, have issued blue bonds, and the Asian Development Bank has set up a blue bond incubator. Whilst various guidelines for the issuance of blue bonds have been developed by market participants and various international organisations, challenges remain. These challenges are not dissimilar to those faced by green bonds in the earlier days, and solutions may be found along a similar vein. In particular, an appropriate and unique definition of blue to distinguish all facets of the wider blue economy, which could include the sustainable extraction of fossil fuels, from the narrower concept of blue bonds might be needed to prevent bluewashing . Additionally, regulatory standards are being developed, for example by the Securities and Exchange Board of India (SEBI), to tighten the framework even further. Altogether, blue bonds may bring significant potential in financing sustainable ocean development.
Original Article: Rogge, Ebbe. (2025). Blue bonds: Sustainable financing for the Blue Economy around the Indian Ocean. Jindal Global Law Review. 10.1007/s41020-025-

00263-5.

Note the attachment is not an inducement to trade and Veles Water does not give advice on investments.