The Wine Map in an Age of Climate Change

New World Wine: The Front Line of Warming



USA · Australia · New Zealand · South Africa · Chile & Argentina

Five regions facing change, and the frontier of adaptation

INTRODUCTION

Why the New World sits on the front line of warming

Europe’s traditional regions work inside appellation systems centuries in the making. Most New World regions — the Americas, Oceania, South Africa — were opened up far more recently. That youth and flexibility means they feel climate change early and sharply, and at the same time serve as a proving ground where new adaptations are tried first.



Relatively young regions

Most commercial wine industries here date from the 19th–20th centuries, with far looser growing rules than in Europe.



Feeling warming first

Many sit in continental or arid climates, where a small rise in temperature feeds straight through to harvest timing and quality.



A proving ground for adaptation

Free from tight regulation, they pivot quickly to new sites, varieties and techniques — setting the pace worldwide.

If temperatures rise 2°C, 70% of the world's wine regions reach a turning point

70%

The share of the world's wine regions where growing conditions could deteriorate badly, or become unsuitable altogether, if temperatures rise 2°C above pre-industrial levels.

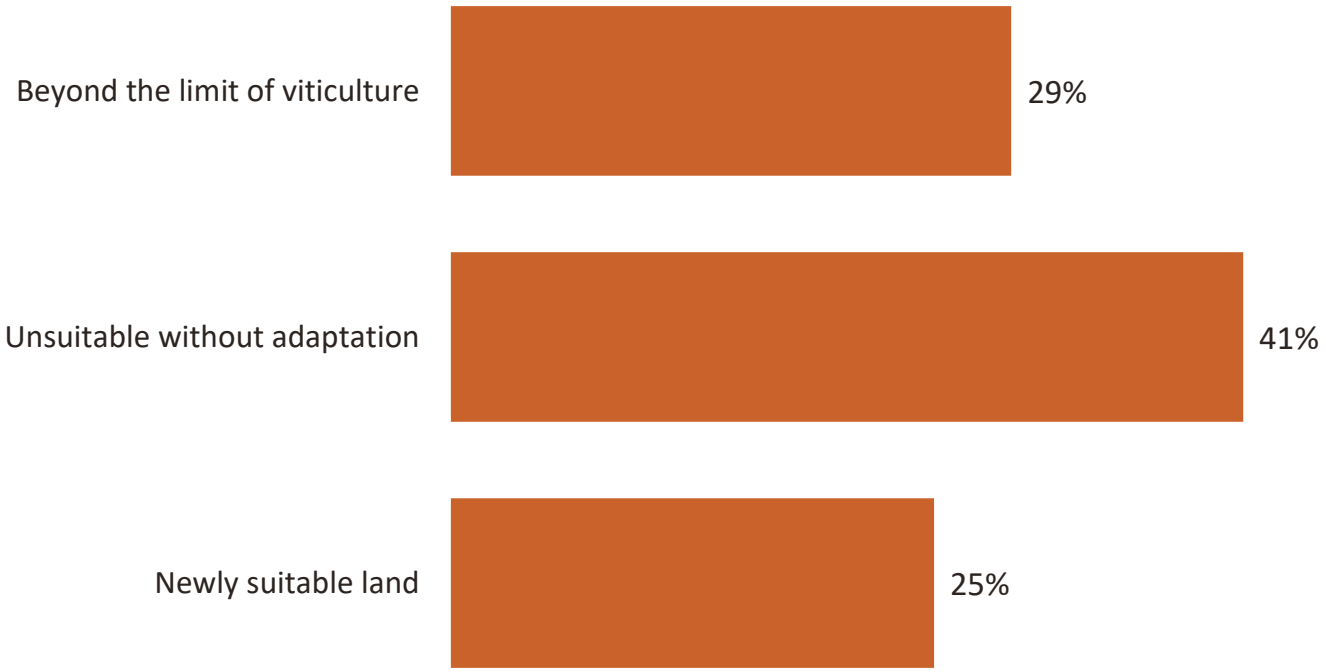
Low-lying and coastal regions are hit hardest: by the end of this century, up to 90% of some areas in Greece, Italy, southern California and Spain could disappear, according to one assessment.

Source: Nature Reviews Earth & Environment (April 2024)

BREAKDOWN

Inside the 70% — a different future for every region

Under a 2°C scenario the damage is not spread evenly. Some regions pass the limits of viticulture altogether; others hold on with the right adaptation; and for some, suitable land actually expands.



29%

The share of regions where heat and drought reach levels unsuited to growing, making production with existing varieties difficult.

41%

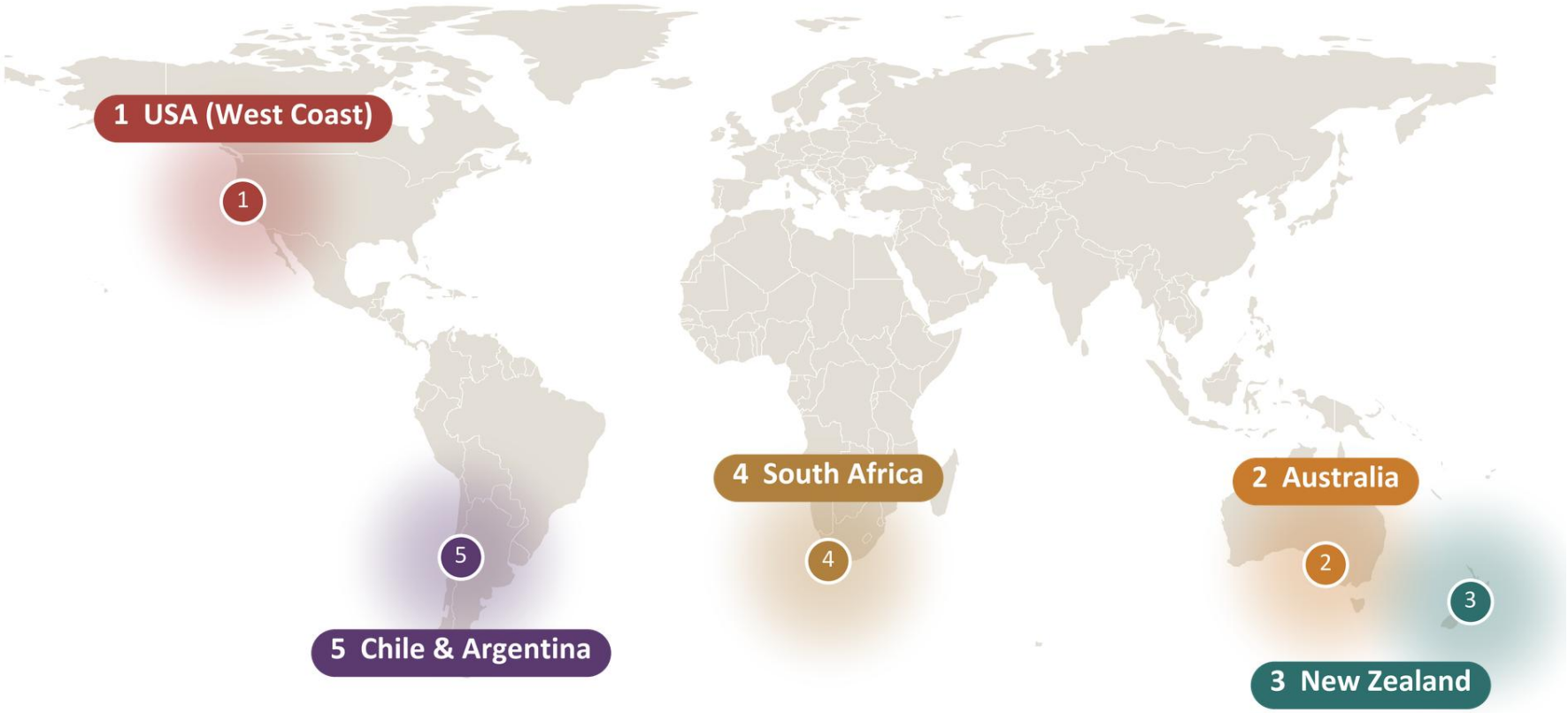
The share of regions that could become unsuitable for growing without adaptation such as irrigation or a switch of varieties.

25%

Some projections see climate change opening up newly suitable land for vines, mainly at higher latitudes and in cool regions.

OVERVIEW

Five regions on the front line of climate change



1 **USA (West Coast)**

Wildfire and smoke taint

2 **Australia**

Heatwaves and chronic water shortage

3 **New Zealand**

Harvest moving earlier

4 **South Africa**

Deepening drought

5 **Chile & Argentina**

Shrinking Andean water

REGION 01 — USA (WEST COAST)

California: wildfire as the new normal

In Napa, Sonoma and other West Coast regions, rising temperatures and intensifying wildfire are beginning to shake the basic premises of growing.

Worsening fire weather

The number of years reaching extreme fire-weather conditions is projected to rise to as many as 21 (against today) later this century, with a sharp fall in suitability for Napa and Sonoma.

The widening smoke-taint problem

In 2025 a Napa wildfire burned more than 6,800 acres, damaging about 1,500 acres of farmland. Losses ran to tens of millions of dollars.

Suitable land moves north, and uphill

Northern areas such as Mendocino and Monterey are becoming more suitable, but squaring that with wildfire risk is a new challenge.

+4–5°C

The projected rise in minimum temperature later this century under a high-emissions scenario (RCP8.5). Growing-season heat accumulation is also projected to rise by 600–700 degree-days.

REGION 02 — AUSTRALIA

A scorching continent hones its water technology

Warm regions such as Barossa and McLaren Vale face chronic water stress, and precision irrigation and recycled water have become their lifeline.

6,000ML+

The annual volume of recycled-water irrigation (megalitres) used on more than 50% of vines in McLaren Vale — the flagship response to chronic water shortage.

The smoke-taint threat

Smoke-taint research took off after the major bushfires of 2019. Warm regions such as Barossa and Clare Valley face especially high water stress.

Investing in precision irrigation

Drip irrigation and data-driven soil-moisture management have lifted irrigation efficiency by up to 41% in Cabernet Sauvignon (2023 study).

Decarbonisation as an industry target

Wine Australia targets a 42% cut in CO2 emissions by 2030, and its 2020 Climate Atlas projects conditions out to 2100.

REGION 03 — NEW ZEALAND

Earlier harvests, a changing Sauvignon Blanc

In Marlborough and other leading regions, the whole calendar from flowering to harvest has shifted clearly earlier over recent decades.

Flowering is accelerating too

Flowering is said to have moved 7–10 days earlier over the past 25 years, with projections of a further three weeks by the end of the century.

A California-like climate?

Researchers suggest Marlborough's climate could approach that of California or Australia's Hunter Valley by the end of the century.

Looking to disease-resistant varieties

Concern over flavour change in flagship Sauvignon Blanc is driving interest in new, disease-resistant varieties.

3–4 weeks

How much earlier harvest has moved in Marlborough and other main regions over recent decades. 2026 brought a record-early vintage.

REGION 04 — SOUTH AFRICA

City and vineyard share the water: the Cape’s thirst

Western Cape regions such as Stellenbosch face chronically low rainfall and, on top of that, competition for water with the cities.

−30%

The projected fall in annual rainfall in the Western Cape by 2050. Globally, some estimates see close to 3°C of warming within this century.

Competing with Cape Town for water

Cape Town, less than an hour from Stellenbosch, also faces chronic water shortage; when rain fails, city residents are said to come first.

A shift to “rare but violent” rain

Rain falls less often but harder when it does, raising flood risk as well.

Rebuilding along the contours

Vineyards are being re-laid along contour lines, with reservoirs and drainage installed. Water-hungry pines are being cleared and native shrubland replanted.

REGION 05 — CHILE & ARGENTINA

A turning point for regions fed by Andean snowmelt

Chilean and Argentine regions that have irrigated with Andean snowmelt now face record-low rainfall and shrinking water resources.

Five to six years of record-low rain

Annual rainfall ran 25–45% below normal year after year. South of 35°S it is described as a drought without precedent in the observational record.

Mendoza gets just 200mm of rain a year

Mendoza, Argentina, is arid to begin with, at around 200mm of annual rainfall. Climate change is said to be raising the frequency of hail, frost and the hot “Zonda” wind.

Up to the high Uco Valley

Between 2010 and 2021 vineyard area in the high-altitude Uco Valley grew 20.7%, while the province as a whole shrank 3.4% — the move to cool high ground is accelerating.

Up to –90%

How far river flow, reservoir storage and groundwater levels fell at their worst during the “megadrought” that struck central Chile through the 2010s, hitting the main regions between 30°S and 38°S.

SHARED CHALLENGE 01

Wildfire and smoke taint — a shared threat across the Pacific

Smoke taint is what happens when grapes are exposed to wildfire smoke for long periods and an unpleasant burnt, ashy character carries into the wine. Countering it has become a central question in both growing and winemaking across the main regions of the USA and Australia.

US West Coast

In 2025 Napa wildfires damaged about 1,500 acres of farmland including vineyards, with losses in the tens of millions of dollars.

Australia

The 2019 bushfires prompted the Australian Wine Research Institute to scale up smoke-taint research, including removal using carbon-based fining agents.

Night and dawn harvesting to dodge smoke risk

Pre-harvest smoke-taint testing

Protective coatings and smarter canopy management

SHARED CHALLENGE 02

Living with dryness — New World know-how on water

South Africa, Chile & Argentina, Australia. In these arid and semi-arid regions, securing water and using it efficiently is the lifeline of production.

South Africa

Reservoirs and rainwater-harvesting systems are being built, and water-hungry pine plantations cleared, to raise self-sufficiency in agricultural water.

Chile & Argentina

Drip irrigation combined with Andean snowmelt data gives precision irrigation; growers are also moving to cooler, higher ground with steadier water.

Australia

Recycled-water irrigation (over 6,000 megalitres a year in McLaren Vale) and soil-moisture sensors have lifted irrigation efficiency by up to 41%.

AT A GLANCE

Five regions at a glance

Region	Main climate risk	Key figure	Main adaptations
USA (West Coast)	Wildfire, smoke taint	Min. temp +4–5°C (late-century projection)	Move north and uphill, fire-response technology
Australia	Heatwaves, chronic water shortage	Recycled-water irrigation over 6,000ML a year	Precision irrigation; 42% emissions cut by 2030
New Zealand	Earlier growing season	Harvest timing 3–4 weeks earlier	Considering disease-resistant varieties
South Africa	Deepening drought and water shortage	Annual rainfall −30% projected by 2050	Contour planting, rainwater harvesting
Chile & Argentina	Andean water decline	River flow etc. up to −90% (drought peak)	Move to high altitude, precision irrigation

COMMON PATTERNS

Four changes shared by all five regions



Suitable land goes higher and cooler

The centre of gravity of grape growing is shifting to higher ground and to cooler, higher latitudes.



Water is the scarcest resource

Advanced irrigation and the use of recycled and rain water are the lifeline of regions in dry climates.



The calendar moves up

Flowering and harvest are arriving weeks earlier, and that is starting to change wine styles too.



Science meets experience

Adaptation that combines climate data and precision-farming tools with the grower’s own experience decides the next move.

Agility is the greatest weapon

Most New World regions have no appellation rules as strict as Europe's. Which varieties to plant, where to plant them, whether to irrigate — the relative freedom to choose largely determines how fast a region can adapt to climate change.

Free choice of varieties

Switching to new varieties and clones suited to the climate can be done quickly, unbound by regulation.

Opening new regions

Cooler land that drew no attention before is being opened up in region after region.

Speed in adopting technology

There is a culture of bringing new technology — precision agriculture, data use — straight into the vineyard.

Emerging areas in Oregon, Waipara in New Zealand, Hemel-en-Aarde in South Africa: cool sites that were unknown until recently are drawing attention as the new regions of a warming world.

CLOSING

In a changing climate, searching for the next bottle

New World wine regions now stand on the front line of a global climate crisis. But that same place is also the front line of experiment, where new regions, new varieties and new techniques are born.

“Next time you tip a glass, imagine what climate story that bottle is carrying.”



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This deck was prepared for a general audience using publicly available information.