

Technical Collection

Bordeaux's changing



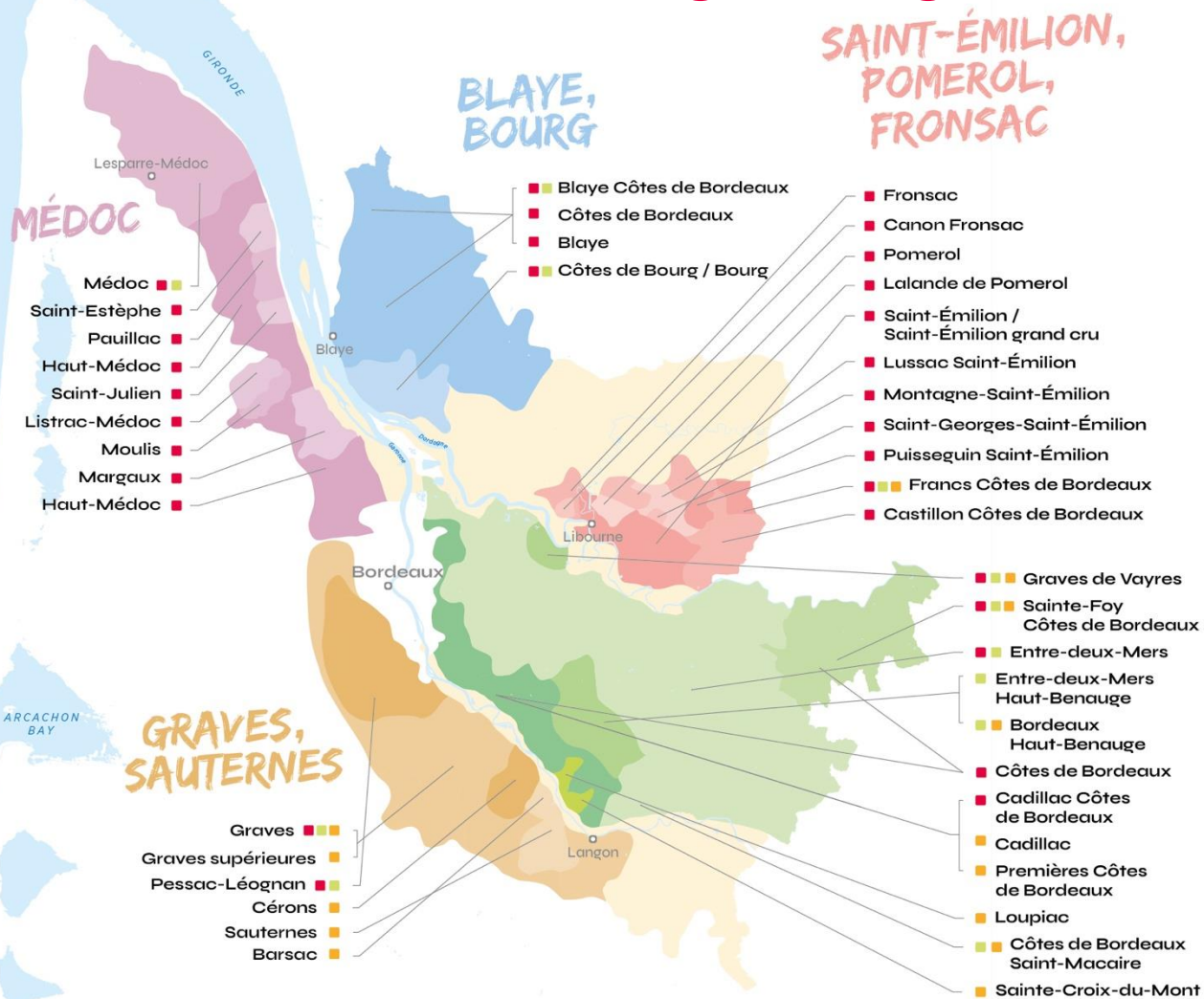
ROADMAP

- Innovation in the vineyards
 - The diversity of grape varieties, an opportunity for the Bordeaux vineyards
 - Biodiversity, an asset to produce balanced wines
 - Methods for combating dieback and climate change
- Innovations in the cellar
 - Developments in fermentation and aging techniques
 - Reusing and recycling waste
 - New closure systems
- CSR policy of Bordeaux wines
- New experiences



ATLANTIC OCEAN

The Bordeaux winegrowing area



BORDEAUX, BORDEAUX SUPÉRIEUR, CRÉMANT



The following appellations and products can be crafted throughout the Bordeaux vineyard

- ■ ■ ■ Bordeaux
- ■ ■ ■ Bordeaux supérieur
- ■ ■ ■ Crémant de Bordeaux
- ■ ■ ■ Bordeaux Clairat
- ■ ■ ■ Bordeaux Claret

0 10 km
©CIVB, 2020 - Cartographie: EdCarto

■ Red ■ Dry white ■ Rosé ■ Sweet white

PRESENTING Bordeaux





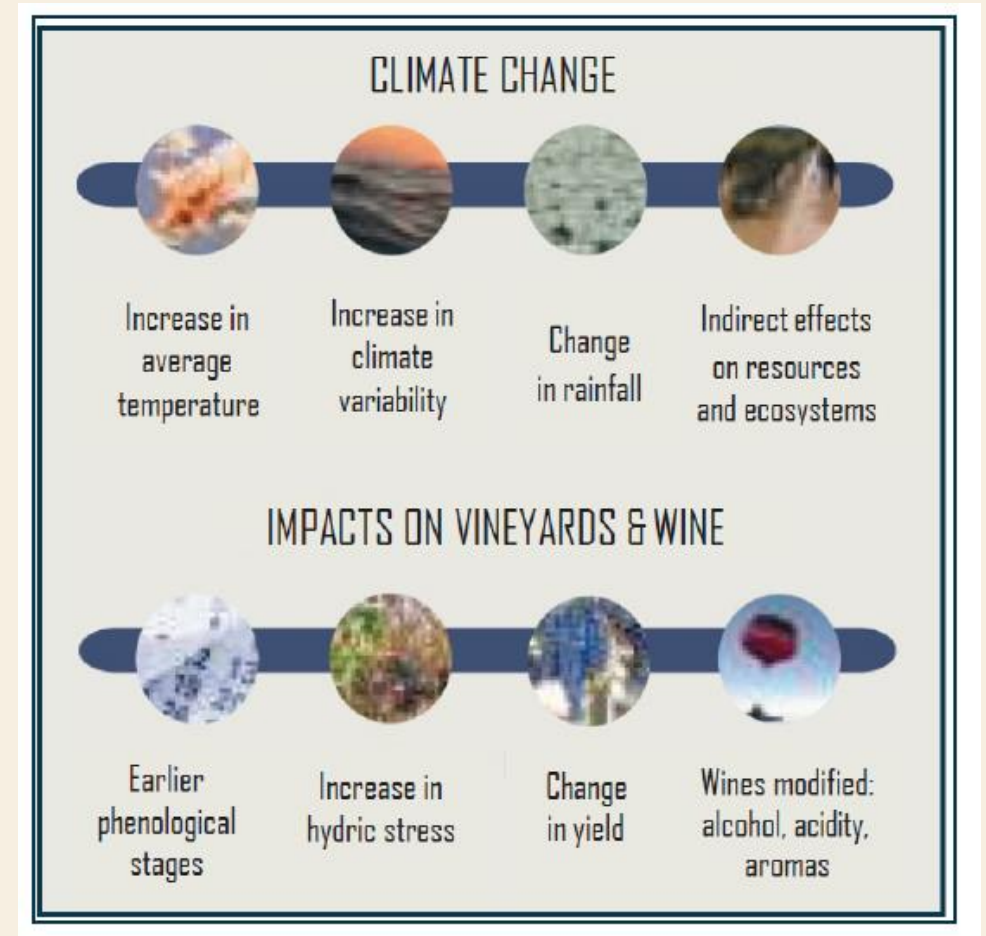
Bordeaux's changing

Innovation in the vineyards

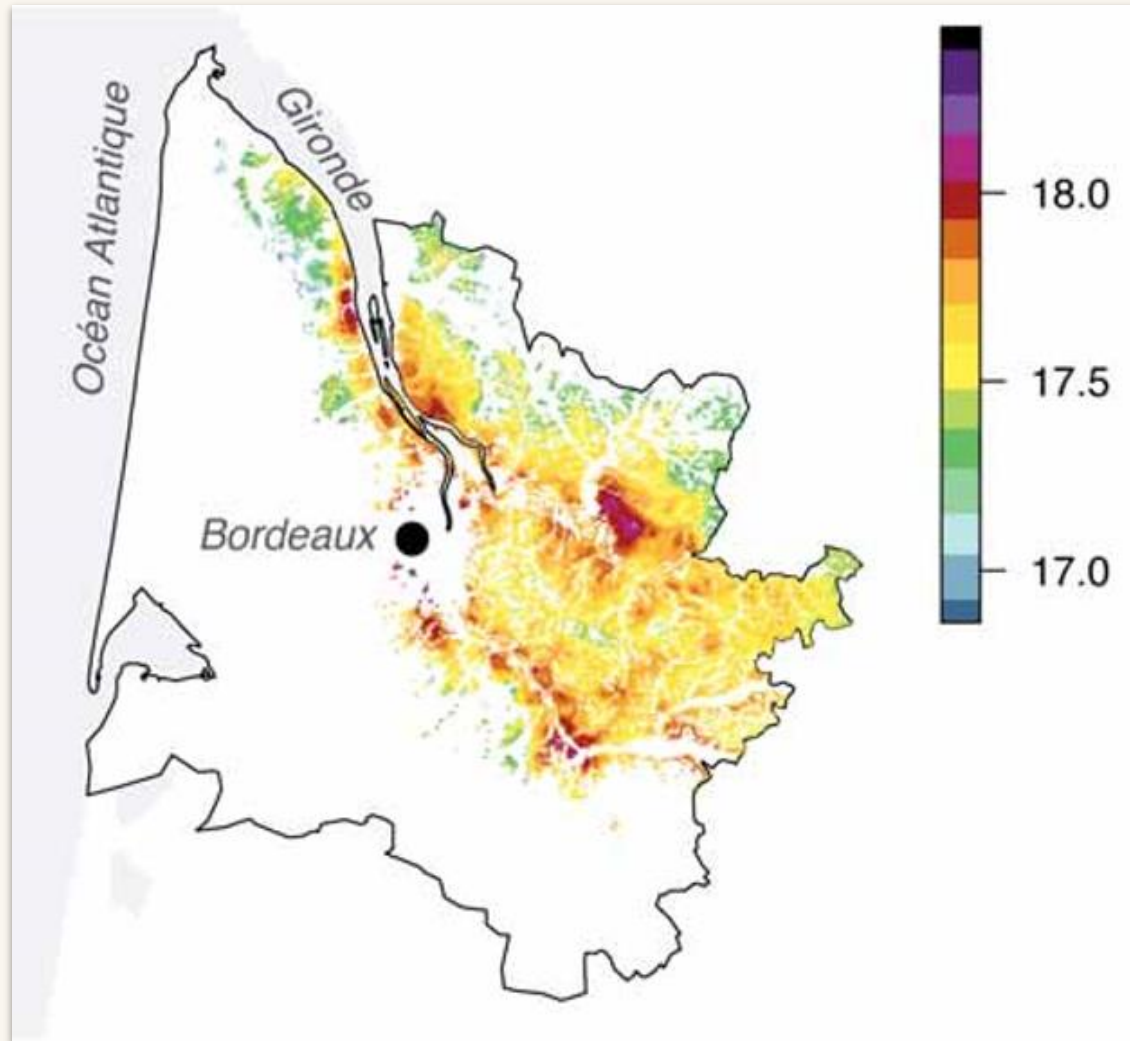


THE IMPACTS OF CLIMATE CHANGE

- Higher average temperatures in Gironde, vintage effect still pronounced; the climate in the Bordeaux region has gone from temperate to **warm temperate**
- Shorter growth cycles since 1989
- Earlier ripening: approximately 20 days earlier compared to 30 years ago
- Increasingly frequent spring frosts
- An increase in the intensity of spring frosts

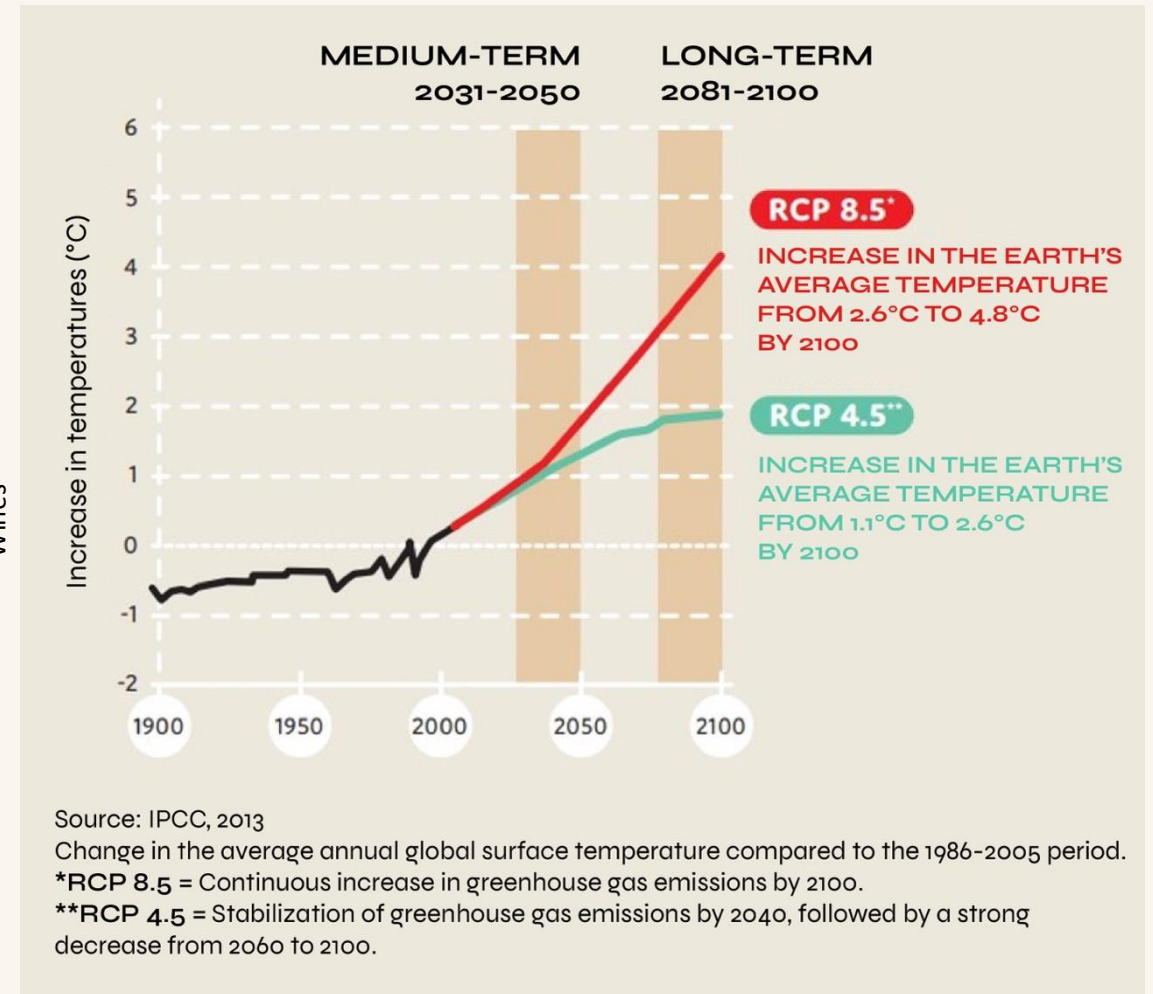


CLIMATE CHANGE DEVELOPMENTS



Average temperatures from April to September – 2001 to 2005

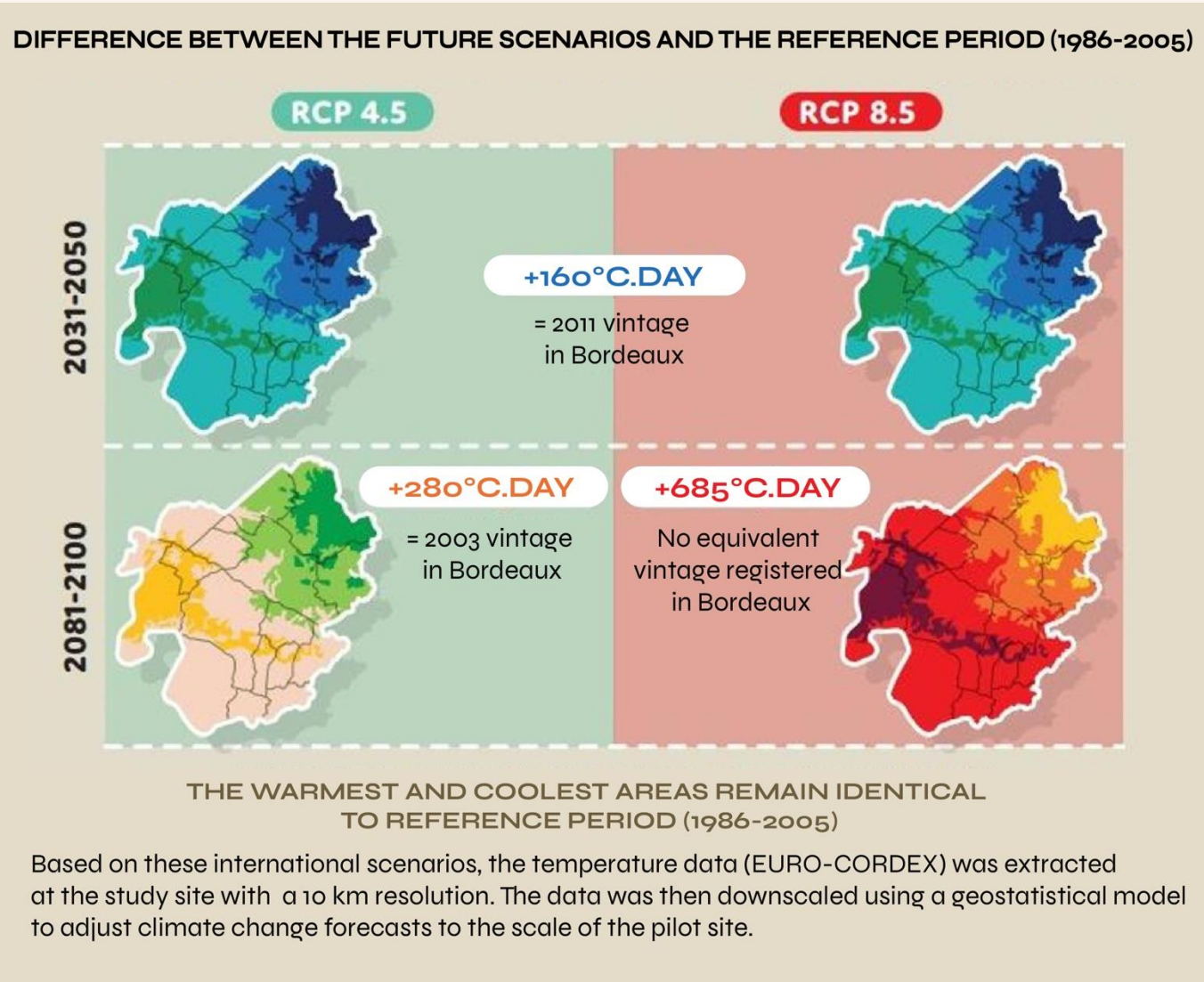
Météo-France, INRA, DE.MET.E.R weather stations
Interpolation and vineyard maps: B. Bois and A. Joly - Féret 2014, Bordeaux and its Wines



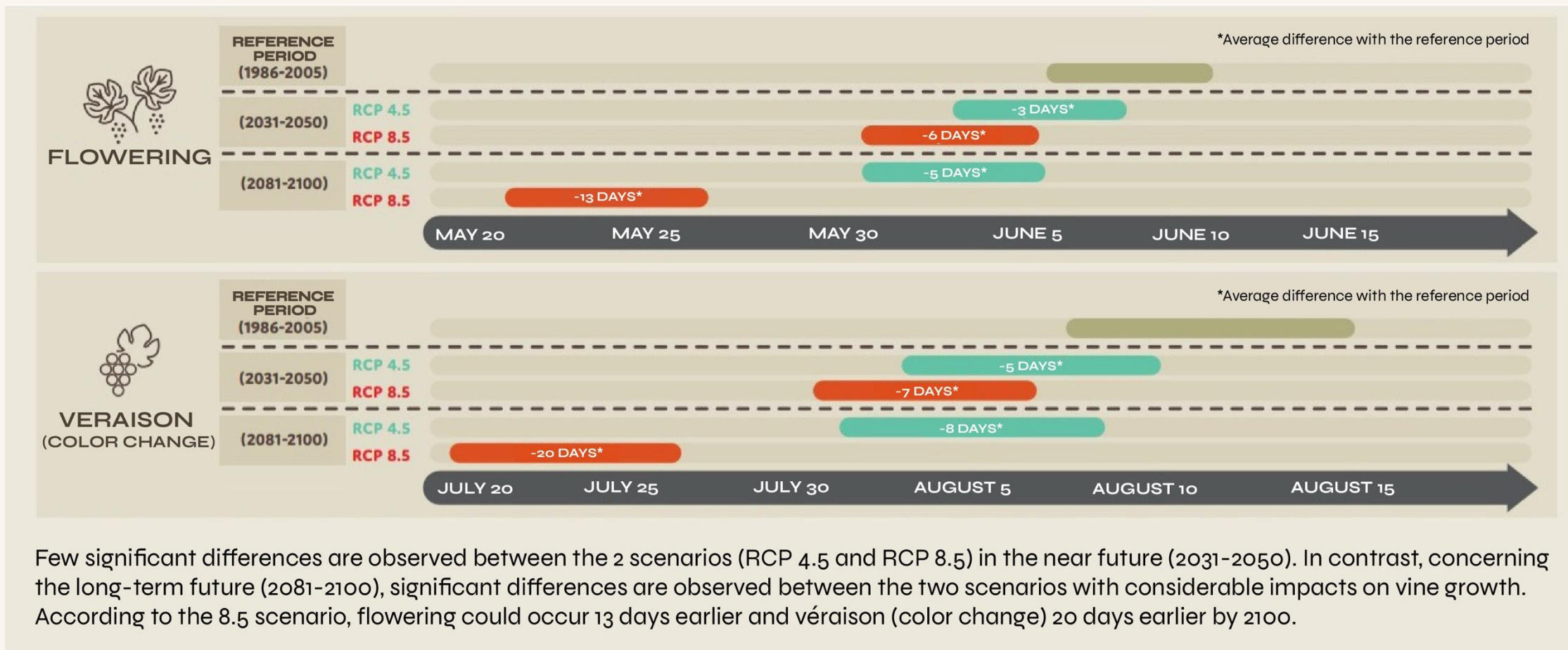
Variations in the average temperature of the earth's surface

Variations in the average temperature of the earth's surface according to two diagrams
(Source: Life AdviClim computer graphics, according to information by the GIEC)

CLIMATE CHANGE FORECAST (Huglin INDEX)



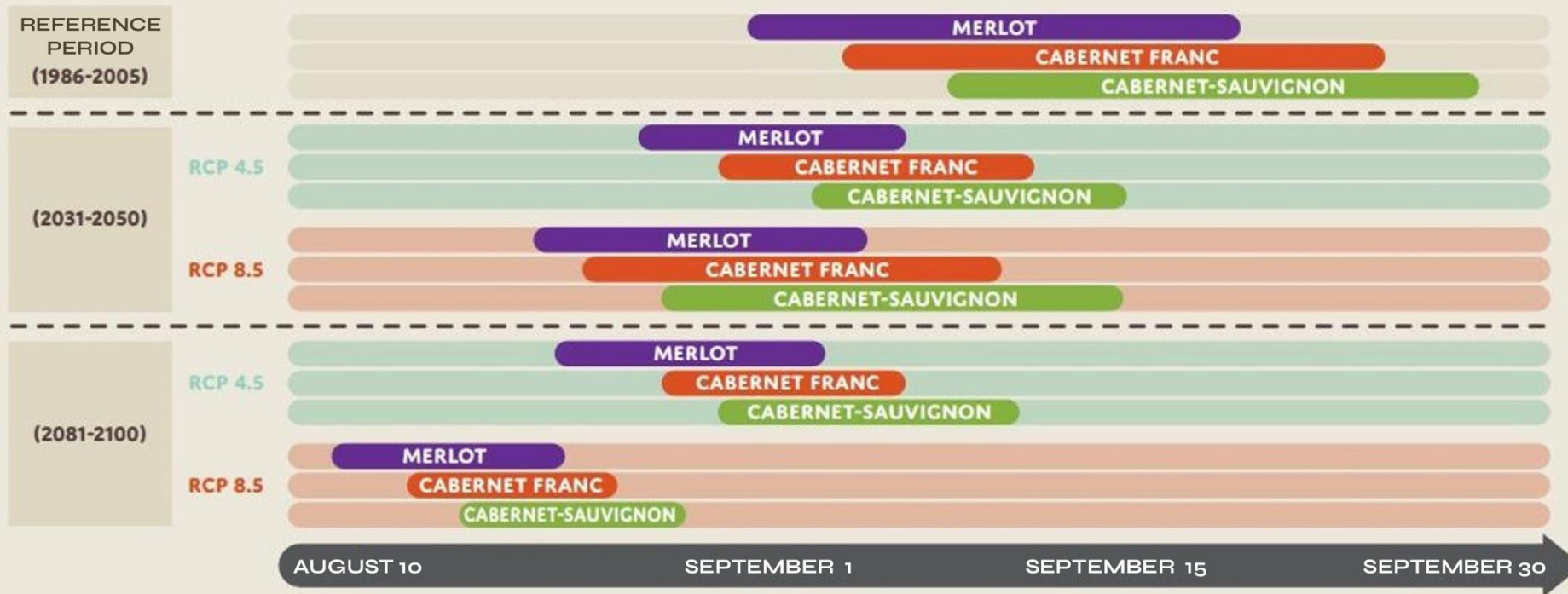
Impact of the climate on vine development



(Source: AdvClim computer graphics – Agnès Destrac Irvine - INRAE)

Adaptation of grape varieties

VARIABILITY IN TECHNOLOGICAL RIPENESS (220 g/L SUGAR) OF THE 3 MAIN BORDEAUX GRAPE VARIETIES



Technological ripeness (220 g/L sugar) dates are very similar for the 3 grape varieties between the 2 periods for scenario 4.5 and for the 2031-2050 period of scenario 8.5. According to these 3 scenarios, technological ripeness will be reached on the following dates:

Merlot:
August 22 – September 7

Cabernet Franc:
August 25 – September 12

Cabernet Sauvignon:
August 28 – September 15

The RCP 8.5 scenario predicts earlier technological ripeness dates for the 2081-2100 period, possibly as soon as August 12 for Merlot

(Source: AdvClim computer graphics – Agnès Destrac Irvine - INRAE)

Changes in agronomic practices

- Delaying the pruning date to slow down the growth cycle and limit the impact of spring frosts.
- Increasing the height of the trunk to reduce the leaf canopy and thus limit the vine's evapotranspiration and water stress: reduced photosynthesis to lower the alcohol content
- Rethinking how plots are planted to reduce sun exposure.
- Limiting leaf thinning to protect the grapes from direct sunlight.
- Developing green cover to reduce evapotranspiration and preserve microbial life in the soil: lower soil temperature
- Adapting the harvest date and harvesting at dawn.
- Adapting plant material (later-ripening grape varieties).





Bordeaux's changing

THE DIVERSITY OF grape varieties, an ASSET for Bordeaux vineyards



PDO - THE 6 MAIN Red grape varieties



MERLOT (66%)

- Early-ripening grape variety
- Round, smooth structure
- Red fruit aromas
- High potential alcohol content
- Good aging potential



CABERNET FRANC (8%)

- Relatively early-ripening grape variety
- Adds elegance, finesse and freshness
- Fruity (raspberry) and floral (violet) aromas



CABERNET SAUVIGNON (21%)

- Late-ripening variety
- Good tannic structure
- Intense aromas of black fruit (blackcurrant) and spices
- Good aging potential



MALBEC (3%)

- New interest in this grape variety has emerged due to climate change.
- Deeply-colored, concentrated and tannic
- Aging potential



PETIT VERDOT (1%)

- Good tannic structure
- Good color and acidity
- Very spicy aromas



CARMENERE (0.1%)

- Historic Bordeaux grape variety which has practically disappeared in Europe
- Produces smooth, full-bodied and deeply-colored wines

pdo - the 4 main **white** grape varieties



SEMILLON (42%)

- Golden color
- Finesse
- Richness and texture
- Floral aromas (acacia blossom)
- Long aftertaste
- Good aging potential



MUSCADELLE (5%)

- Incredibly aromatic (floral and Muscat)
- Low acidity
- Round



SAUVIGNON BLANC (45%)

- Pale color
- Lively, good acidity
- Aromatic freshness (citrus, tropical fruit, boxwood)
- Powerful and complex when fermented in barrel



SAUVIGNON GRIS (4%)

- Light pink color
- Floral and Muscat aromas

+ accessory varieties:

Ugni Blanc (<2%), Colombard (<2%), Merlot Blanc (<0.5%), Mauzac Blanc (0%)

Breakdown of grape varieties

Red grape varieties:

	Cab Franc	Cab Sauv	Merlot	Cot	Carménère	Petit Verdot
Blaye	main	main	main	accessory	accessory	accessory
Bordeaux (rosé)	main	main	main	main	main	main
Bordeaux (red)	main	main	main	main	main	main
Bordeaux Sup (red)	main	main	main	main	main	main
Canon Fronsac	main	main	main	accessory	accessory	accessory
Côtes de Bordeaux (red)	main	main	main	main	accessory	accessory
Côtes de Bourg (red)	main	main	main	main	accessory	accessory
White Crémant	main	main	main	main	main	main
Crémant Rosé	main	main	main	main	main	main
Entre-Deux-Mers	main	main	main	main	accessory	main
Fronsac	main	main	main	accessory	accessory	accessory
Graves (red)	main	main	main	main	main	main
Graves de Vayres (red)	main	main	main	main	main	main
Haut-Médoc	main	main	main	main	main	main
Lalande de Pomerol	main	main	main	main	accessory	accessory
Listrac	main	main	main	main	main	main
Lussac St-Emilion	main	main	main	main	accessory	accessory
Margaux	main	main	main	main	main	main
Médoc	main	main	main	main	main	main
Montagne St-Emilion	main	main	main	main	accessory	accessory
Moulis	main	main	main	main	main	main
Pauillac	main	main	main	main	main	main
Pessac Léognan (red)	main	main	main	main	main	main
Pomerol	main	main	main	main		main
Puisseguin St-Emilion	main	main	main	main	accessory	accessory
St-Emilion	main	main	main	main	main	accessory
St-Emilion Grd Cru	main	main	main	main	main	accessory
St-Estèphe	main	main	main	main	main	main
St-Georges St-Emilion	main	main	main	main	main	main
St-Julien	main	main	main	main	main	main

White grape varieties:

	Muscadelle	Sauvignon B	Sauvignon G	Sémillon	Colombard	Ugni B	Merlot B	Mauzac B
Barsac	main	main	main	main				
Bordeaux (white)	main	main	main	main	accessory	accessory	accessory	
Bordeaux (rosé)		accessory	accessory	accessory				
Bordeaux Sup (white)	main	main	main	main	accessory	accessory	accessory	
Cadillac	main	main	main	main				
Cérons	main	main	main	main				
Côtes de Bordeaux (white)	main	main	main	main	accessory	accessory		
Côtes de Bourg (white)	main	main	main	main	main	main		
White Crémant	main	main	main	main	accessory	accessory	accessory	
Crémant Rosé	main	main	main	main				
Entre-Deux-Mers	main	main	main	main	accessory	accessory		accessory
Graves (white)	main	main	main	main				
Graves de Vayres (white)	main	main	main	main			accessory	
Loupiac	main	main	main	main				
Pessac-Léognan (white)	main	main	main	main				
Premières Côtes de Bordeaux	main	main	main	main				
Sauternes	main	main	main	main				
Ste-Croix-du-Mont	main	main	main	main				
Côtes de Bordeaux St-Macaire	main	main	main	main				

indigenous - heritage grape varieties

Grape varieties originating in or historically planted in the Bordeaux region

RED

- Gros Verdot
- Mansin (Mancin)
- Fer
- Grapput (Bouchalès)
- Prolongeau (Bouchalès)
- Cahors (Valdiguié?)
- Saint Macaire
- Castets
- Chalosse Noire (Béquignol noir)
- Folle noire (Jurançon noir)
- Pardotte (Pignon)

WHITE

- | | |
|---|---|
| • Ugni Blanc (syn.: St Emilion des Charentes, Trebiano) | • Blanc de Gaillac (Ondenc, Meslier St François?) |
| • Muscadet (Chasselas Doré, Ugni Blanc?) | • Chalosse Blanche (Ondenc, Prueras, Graisse?) |
| • Colombard | • Chasselas |
| • Mauzac Blanc | • Pélegane (Meslier St François) |
| • Malvoisie (Clairette) | • Folle blanche |
| • Blanc Auba | • Montils |
| • Blanc Verdot (Blanc Vert?) | • Monbadon |
| • Clairette dorée (Blanc Dame, Clairette?) | |

Varieties of interest for adapting to climate change - vifa

In response to challenges linked to climate change (spring frosts, high summer temperatures, droughts), reduction in plant protection products, resistance to vine diseases (mildew, powdery mildew), diversity of grape varieties with local “forgotten” varieties.

The INAO has authorized 6 new grape varieties* since December 2020:

4 red grape varieties

- **ARINARNOA:** INRA 1956, Tannat x Cabernet Sauvignon
- **CASTET:** originating in Southwest France
- **MARSELAN:** INRA 1961, Cabernet Sauvignon x Grenache
- **TOURIGA NACIONAL:** originating in Portugal

2 white grape varieties

- **ALVARINHO**
- **LILIORILA:** Baroque x Chardonnay

MAXIMUM PROPORTION

- 5% of the total area under vine of an estate
- 10% of the final blend (mention on the label not authorized)

To date, several DMOs have modified their specifications:

- Bordeaux and Bordeaux Supérieur, Médoc, Haut-Médoc, Lustrac Médoc and Margaux
- Under consideration: Saint-Emilion, Montagne Saint-Emilion and Côtes de Bourg

*The implementation is subject to a tri-party agreement signed by the INAO, the winegrowers' union and the producer, for a duration of 10 years, renewable once.

Various studies underway to adapt plant material

NEWvine Program: creating new grape varieties which are resistant to the main vine diseases (mildew, powdery mildew, black rot), which respect the characteristics of Bordeaux wines (Cabernet Franc and Petit Verdot are the selected grape varieties), and which are adapted to cope with climate change.

HEATBERRY: study on the impact of climate change on the phenology and quality of Bordeaux wine, using panels to mimic a warmer climate.

ViTadapt: launched in 2007, a test plot planted with 52 different grape varieties. Objective: to characterize the behavior of French and foreign grape varieties over time.

GREFFadapt: a test plot of 55 rootstocks (30 authorized in France and 25 abroad). Objective: to determine their agronomic properties and adaptation to water stress to offer Bordeaux winegrowers high-quality rootstocks that meet the latest climate requirements.

The Bordeaux wine industry has historically worked with so-called Atlantic rootstocks (tolerant to humidity); the aim now is to plant so-called Mediterranean rootstocks which are tolerant to drought.



Adapting to consumer trends

focus

UNE CONSOMMATION EN FORTE BAISSÉ DEPUIS LES ANNÉES 60

Une baisse de 60 % de la consommation pour l'ensemble des boissons alcoolisées



LE VIN

127 L **40 L**
en 1960 aujourd'hui
Soit -70%



LES SPIRITUEUX

5,8 L **5,3 L**
en 1960 aujourd'hui
Soit -9%

en litres, par adulte et par an



LA BIÈRE

39 L **32 L**
en 1960 aujourd'hui
Soit -18%

The concept of wine as food has disappeared in favor of wine as PLeasure.

Less but BETTER



Casual occasions ↗ ↗ ↗

Formal occasions



white médoc pdo



2025: validation by the INAO



Main specifications:

- Geographical production area: same as for red wines
- Mandatory environmental certification
- at least 30% of the volume must be oak-aged



An aromatic nose marked by notes of citrus, white fruit (peach, apricot), tropical fruit and lychee, as well as floral notes.



2025 production figures:

- 208 ha
- 9,500 hl
- 89 winegrowers



Bordeaux Claret pdo



2025: validation by the INAO



Main specifications:

- production area covering the entire Bordeaux wine region
- 6 red grape varieties + 5 VIFA
- Low tannin levels (20–55 total phenolic index)
- A minimum alcohol content of 11%
- Residual sugars permitted, up to 7 g/l (depending on total acidity)
- A strengthened quality control protocol



A wide range of possible colours, ranging from ruby red to a pale purple (between 3 and 15 on the Colour Intensity Scale)



2025 production figures (first vintage):

- 16,500 hl
- 40 winegrowers



Red Entre-deux-mers pdo



2023: validation by the INAO



Main specifications:

- Geographical production area: same as for white wines
- Planting density: same as for white wines
- 6 red grape varieties; mandatory blending
- Aging: no container imposed
- Marketing: from January N+2 of the harvest
- A pivotal tasting to validate the cuvée



Nuances of forest floor, truffle and menthol mingled with complex fruity notes and characteristically fresh tannins.



2025 production figures (second vintage):

- 190 ha
- 6,700 hl
- 37 winegrowers



A nEW gENERation OF WINES

- Lighter, fruity wines with fewer tannins = easy-to-drink red wines
- Crunchy, young red wines served chilled
- The return of forgotten grape varieties: helps to explore new balance possibilities and create unusual and highly personalized blends
- Vegan cuvées
- Cuvées in amphoras
- Wine with no added sulfites
- New packaging: end of the Bordeaux bottle, wine in cans to drink on the go, screw caps
- Modern labels with less emphasis on the “château” concept





Bordeaux's changing

Biodiversity, an asset to produce balanced wines



SUSTAINABLE SOIL MANAGEMENT

- Planting of **cover crops** between vine rows to add organic matter to the soil = a healthy, fertile and restored living soil to produce high-quality grapes.
- Importance of **microfauna** (earthworms and insects) which live in the soils:
 - Incorporation of organic matter to feed the vines
 - The galleries dug by the earthworms improve vine root development and water absorption, and increase soil resistance to erosion.

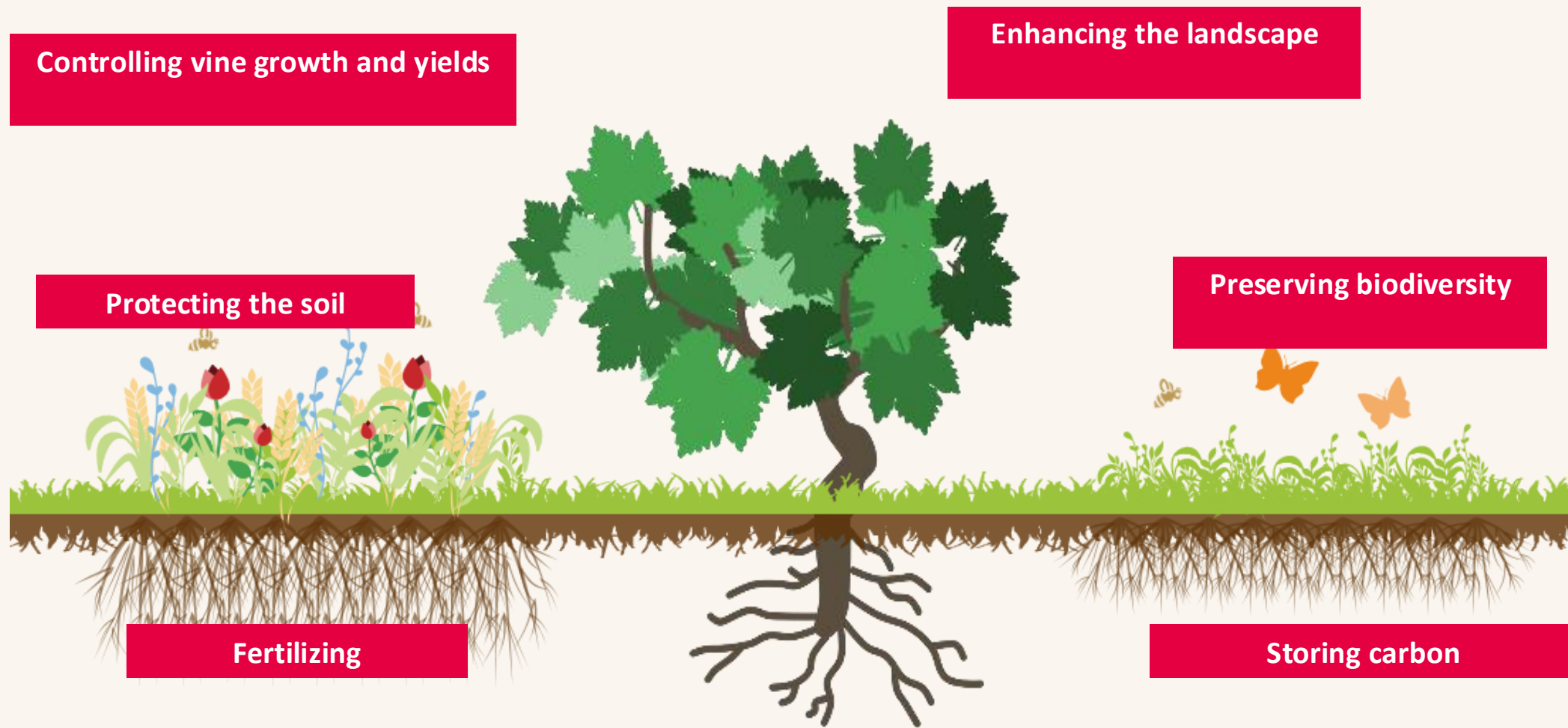
Water usage: special mention!

Over 90% of French vines are not irrigated

This figure is almost 100% in Gironde



FOCUS ON SOILS AND SUBSOILS



Development of agroforestry to preserve biodiversity



This practice consists of creating a link between vine and forest and recreating an **ecological corridor** by planting trees and shrubs (cooperation between vines and trees):

- In plots: in rows in place of vines or aligned between vine rows.
- On the edge of plots: organized in hedges, in clumps or isolated.

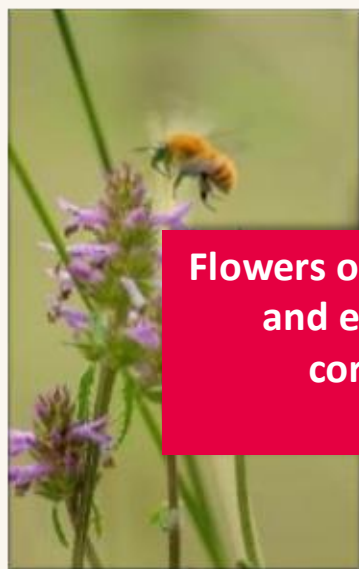
Agroforestry is often associated with orchards or vegetable gardens, vegetable seeds, the presence of animals (agropastoralism) and beehives.

Local species; local plant and fruit species (vineyard peaches, cherry trees, etc.)

The benefits?

- Root synergy between the various species
- Improves the soil structure due to the higher percentage of organic matter
- Reduces soil erosion by aiding water infiltration via roots
- Wind-breaker effect
- Protects water
- Changes the microclimate
- Promotes biodiversity: insect hotels, nesting boxes
- Carbon sink

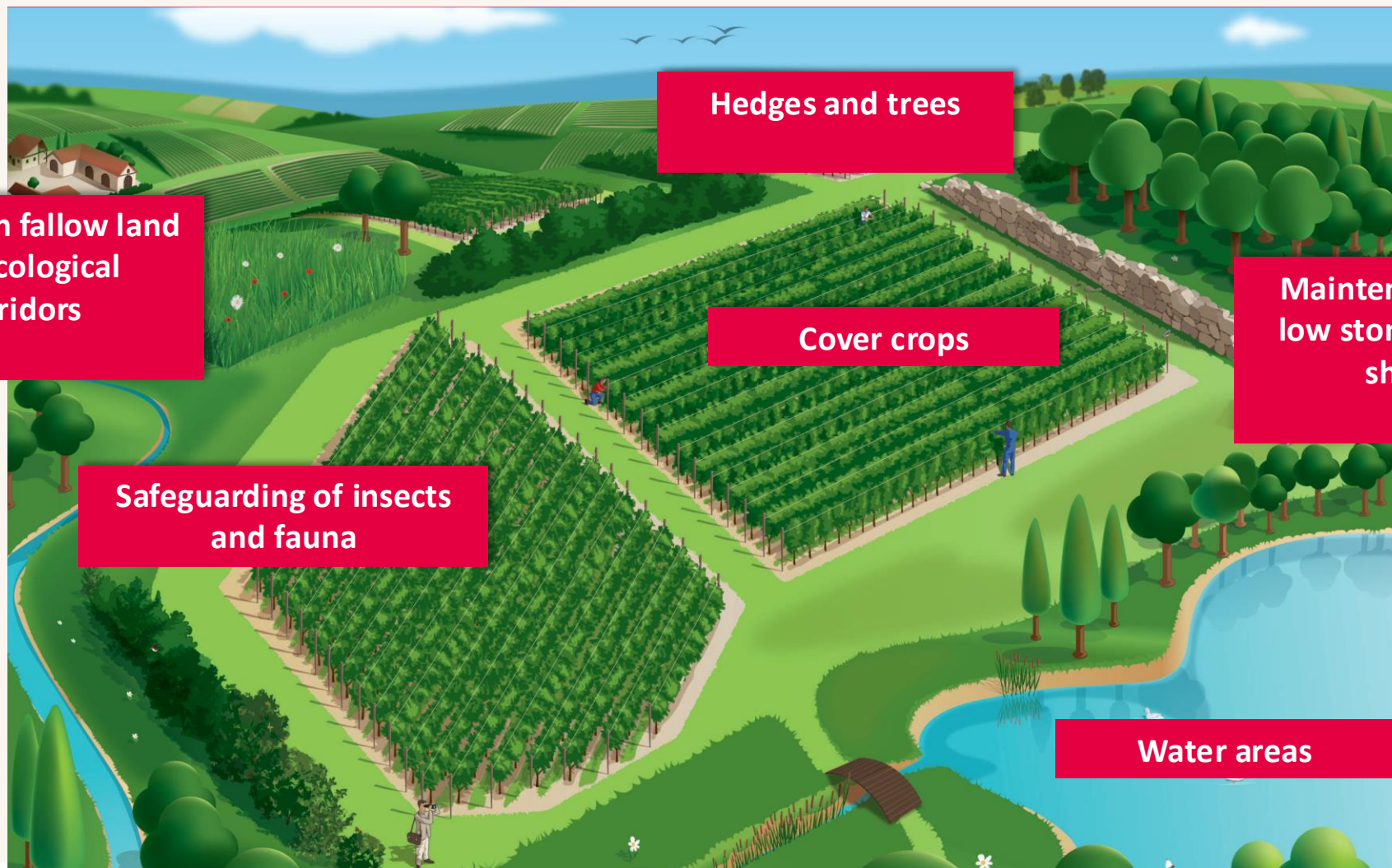
FOCUS ON A VINEYARD PLOT



Flowers on fallow land
and ecological
corridors



Safeguarding of insects
and fauna



Hedges and trees

Cover crops

Maintenance of old
low stone walls and
shelters

Water areas



They DID it!



BORDEAUX FAMILIES (COOPERATIVE CELLAR)

5,000 ha, organic viticulture (AB), HEV, Terra Vitis, Demeter

708 trees planted in 2020 and 2021 (hawthorn, medlar, hazel, willow, ash, etc.)

"We are working to create a landscape conducive to biodiversity by creating corridors for wildlife, managing ditches with vegetation, etc."

Philippe Cazaux, president of the co-op



CHATEAU ANTHONIC

28 ha, organic viticulture

PDO: Moulis-en-Médoc

Between 400 and 500 trees planted in plots since 2010 and 3 km of hedges.

"We have transformed the landscape and promoted the return of biodiversity in the vineyard. We still have ideas for more vertical integration! Shaping a new landscape is a fine mark to leave behind."

Jean-Baptiste Cordonnier, wine-grower



CHATEAU CAR SIN

18 ha, organic viticulture

PDO: Bordeaux, Cadillac Côtes de Bx, Cadillac

More than one hundred trees planted (apples, pears, black-currents, blueberries, walnuts, etc.)

And also a hen house, a draught horse, a pony and a beehive.

"Château Carsin is not just a wine estate, it is a farm. Healthy biodiversity is at the heart of our business."

Nea Berglund, winegrower

Preserving biodiversity



SUCCESSFUL PROJECTS

- Acaricide control.
- GDON (Defence Groups against Pests).
- Mating disruption.
- Enhanced space planning sheltering biodiversity.
- Grass cover and green fertilizers.
- Bee Friendly certification.
- GIS system (geographical information system) to list agroecological infrastructures (AEI)



FUTURE OPPORTUNITIES

Participating actively in the OAB (Agricultural Observatory for Biodiversity).

Conducting studies, for example on the role of bats to regulate the proliferation of pests such as tortrix moth caterpillars, and how to turn them into allies of the vineyard. A project co-run with the Bird Protection League and Bordeaux INRAE (French National Research Institute for Agriculture, Food and Environment).

They DID it!



CHATEAU DE REIGNAC

77 ha, sustainable agriculture

PDO: Bordeaux Supérieur

Partnered with INRAE to evaluate the positive impact of forests planted close to vines.



CHATEAU D'ARGADENS

39 ha, sustainable agriculture

PDO: Bordeaux Supérieur

Installed a beehive, an "insect hotel" and started practicing agroforestry.

"We set up a couple of custom-made sustainable projects and ran a more general study on the interaction between our vines and soil, leading to the implementation of best practices."

Fabien Laborde, Technical Director



CHATEAU D'ARCHE

50 ha, sustainable agriculture

PDO: Sauternes

Planted 70 meters of hedges along vine plots.

"We are very proud to rework the soils, even if it comes at the cost of not having the best tended vines. We've found and created better balance both in our vines and our wines. We've noticed that the flora is more diverse and some species of insects are coming back."

Jérôme Cosson, Operations Director



Bordeaux's changing

HOW TO PROTECT THE BORDEAUX VINEYARDS



THE PRINCIPLES OF RESILIENT PRUNING

Why prune the vines?

- To balance the leaf-to-fruit ratio and therefore produce high-quality grapes.
- To ensure the longevity of the vines, by adapting the yield to the vine's vigor.
- To organize the plots into vine rows and increase the sun exposure of the leaves and grapes.
- To facilitate the organization of the agricultural area and allow the passage of tractors and humans.

When should you prune the vines?

- In winter, during the dormancy period
- As late as possible to reduce the risk of frost on buds during spring



HOW TO PRUNE THE VINES?

Virtuous pruning or pruning which respects sap flows:

- Ensuring the longevity of the vine by limiting grapevine trunk diseases
- Respecting natural sap flows
- Promoting scarring by not pruning too closely and leaving desiccation cones
- Choosing the canes carefully: respecting sap flows, in line with vine rows and with enough vigor

For the pruner:

- Warming up, protective equipment, hydration and position
- Good tools: manual or assisted shears that are ergonomically designed, sharpened and with fully charged batteries
- Clear pruning instructions, specifying the number of arms and buds left over



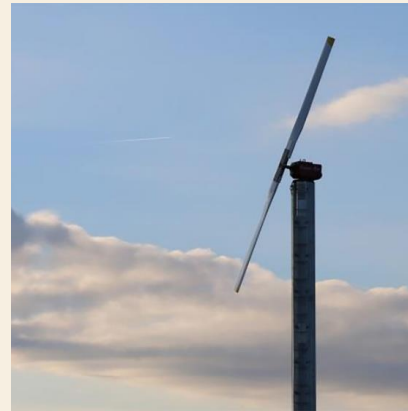
THE FIGHT AGAINST SPRING FROST

The active fight against frost:

- Air circulation:
 - Fixed or removable antifrost towers
 - Mobile antifrost towers – mobile wind turbines
- Helicopters
- Protection through heating:
 - Warm air convectors (e.g. FrostGuard)
 - Candles
- Sprinklers
- Heating string lights (Château La Tour Blanche in Bommes)

The passive fight against frost:

- Delaying pruning
- Windbreaks
- Clearing land around vine rows and planting poplars far away from plots: improved air circulation (Château Puyfromage in Saint-Cibard)



THE FIGHT AGAINST HAIL

Hail cannons:

Mix of acetylene and dry air which triggers a cannon shot at 130 dB. The shock wave created covers a protection surface area of 80 ha.

Silver iodide generators:

Release silver iodide salts in the storm cell to provoke the formation of many smaller hailstones which are less dangerous. Suspected soil pollution.

Balloons filled with hygroscopic salts:

A helium-filled balloon drives a salt-loaded torch into the hail cloud, dissolving all or part of the hailstones after it explodes. Only beneficial if carried out collectively.

Anti-frost nets:

A knitted net in a mesh which lets the sun and spray treatments infiltrate, from 0.5 to 1 m in height, installed on each side of the vine row. The installation takes place before bud break. This technique is rarely used because it is very expensive.

The collective fight against hail: ADELFA 33 program

- One silver iodide generator installed every 10 km, switched on 3 hours before a storm to reduce the hailstone size by 70%.
- 140 operational generators in the Bordeaux wine region activated by 360 volunteers.





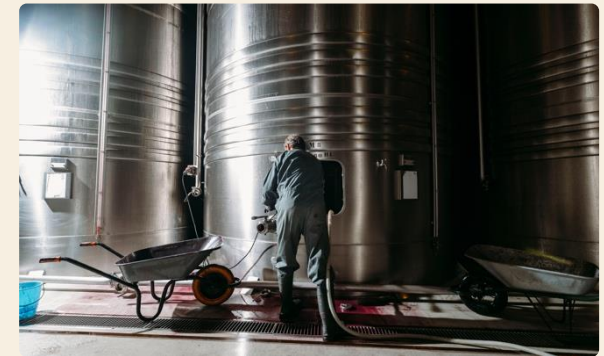
Bordeaux's changing

Innovations in the cellar



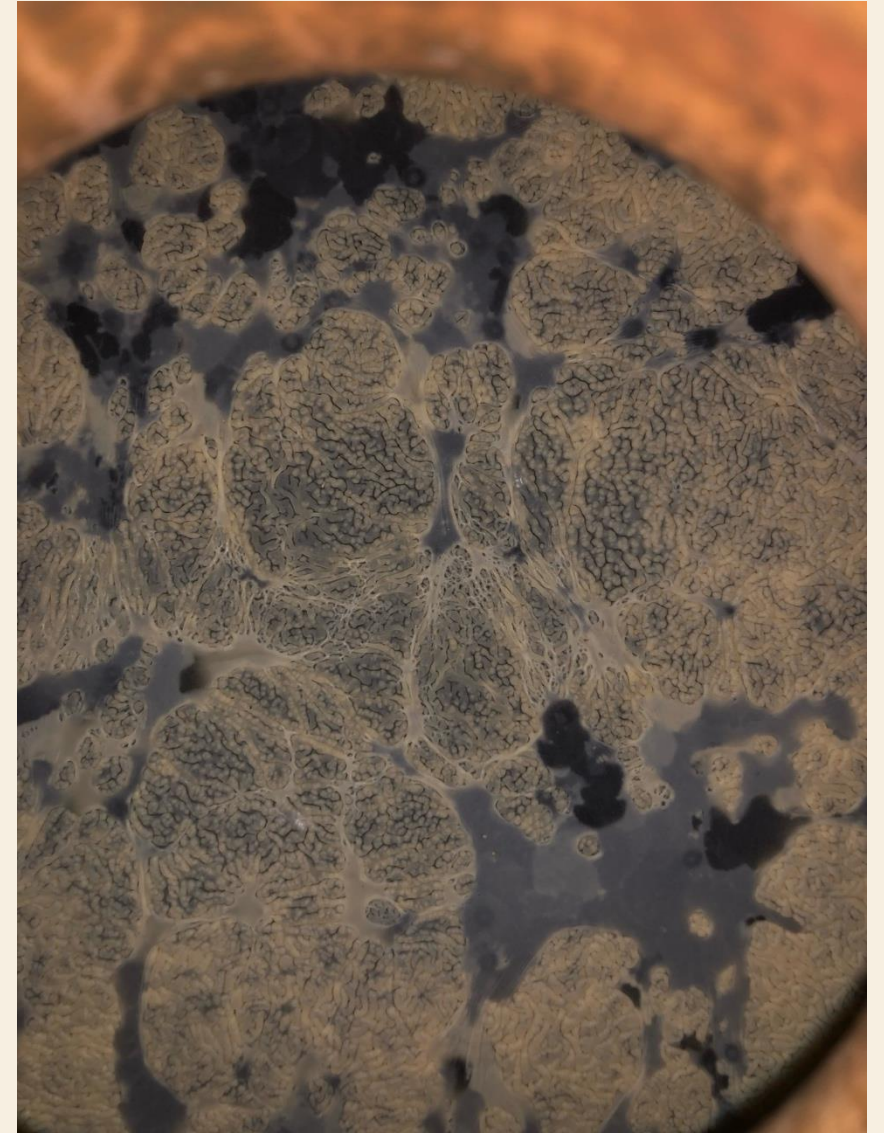
Minimal INTERVENTION IN THE CELLAR TO maximize THE expression OF THE terroir

- **Plot-by-plot and intra-plot management:** wine batches are processed individually from the harvest to the end of fermentation = greater precision and expression of the terroir
- **Vats adapted to the size of the plots:** homogeneity in terms of the quality and ripeness of the plots
- **Concentration vs power?** Aromatic refinement and finesse of the tannins
 - Reduced maceration time
 - Fermentation at lower temperatures
 - Concentration obtained by gentler extraction (with bleeding off) = fewer tannins
 - Light pumping over alternated with *pigeage* (punching down the cap)
- **Greater understanding of the role of oxygen**
 - Reduced oxidation/enhanced brightness
- **Adapting blends:** diversifying grape varieties and varying the proportions of each grape variety in the final wine to mitigate the effects of climate change



The universe of yeast revisited: a revolution in bordeaux

- **Bio-protection of grape musts:**
 - Fermentation begins with non-saccharomyces yeast as early as the harvest: a different kind of aromatic exploration and the elimination of sulfites during fermentation
- **Production of yeast creams** to select “terroir” yeast
- **The yeast of the future:**
 - Preserved acidity (freshness and balance)
 - Yeast with low alcohol production



Developments in aging techniques

- **Different types of aging; alternative containers:**
 - Neutral containers: cement, concrete, stainless-steel vats which require less energy to be heated or cooled down
 - Return to the roots with terra cotta and sandstone amphoras which promote micro-oxygenation, increasingly precise fruit and minimize oaky aromas and the amount of sulfites used
 - Concrete eggs or egg-shaped vats for aging on fine lees
 - Wine globe
 - Reduced use of new oak
 - Larger barrels (500 liters compared to 225 liters) to preserve freshness
- **Lower doses of SO₂:** -30 to 60% in 40 years
- **Shorter barrel aging**



New labeling rules

Listing of ingredients and nutritional values:

- From 8 December 2023 onwards
- All wine and spirits producers in Europe
- Digitalized information via a QR code
- Factual information disassociated from all commercial strategies



REUSING BOTTLES

Reminder of CO₂ emission reduction objectives:

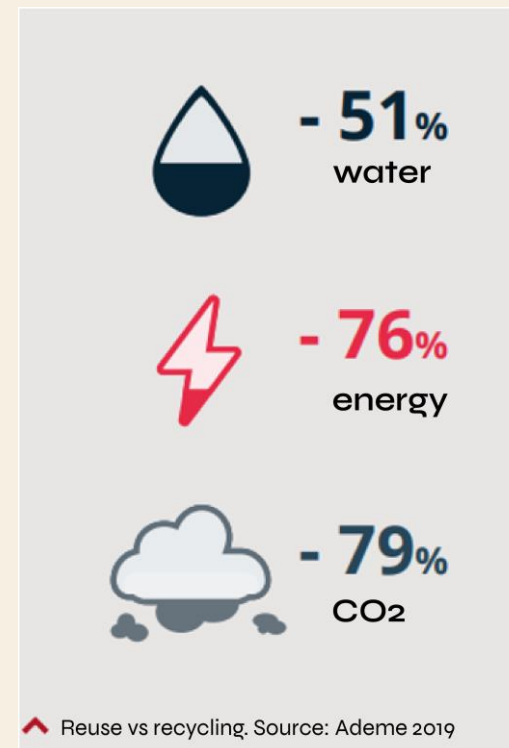
- Reduce bottle weight by 10%
- Increase the proportion of recycled glass by 10% (cullet content)
- Reuse 10% of bottles by 2030
- Bottles represent **28% of the industry's carbon balance**

AGEC law: Anti-waste for a Circular Economy law voted in 2020

- Transforming the linear economy (produce, consume, throw away) into a circular economy
- Obligation to release a percentage of reusable packaging back into the market

Advantages of reuse:

- When reused at least twice, reusable packaging is ecologically more profitable than recycled packaging – recycling: 24 hours at 1,500°C / reuse: 20 minutes at 80°C
- Considerable benefits for distances up to 600 km between the filling and distribution sites
- Economic benefits: protection against bottle price fluctuations



REUSE CYCLE IN ADDITION TO THE RECYCLING CYCLE



RAPPORTEZ-MOI
POUR RÉEMPLOI



jaimemesbouteilles.fr

HOW TO START REUSING BOTTLES

Releasing reusable bottles on the market

- Using a single bottle suitable for reuse
- Solution offered by the Réseau Vrac et Réemploi and by France Consigne (bottles weighing more than 550 g)
- Standard bottle suitable for reuse under development by O-I and Verallia. Average weight up to 520 g

Using reused bottles

- Solution offered by specialized wine bottle washers who collect and wash available bottles and reconstitute batches
- A return-to-market rate between 20 and 50%

Organizing a collection at the estate then washing collected bottles

- Reusing bottles sold or consumed at the estate
- Reusing bottles used for samples
- Reusing empty bottles left over from open pallets

Collecting bottles for reuse at storage points located throughout the region



DiffErent types OF CORKS



Natural cork stoppers

Extracted directly from cork planks
using a punching machine
Body: solid cork



Colmated stoppers

Natural cork stoppers with lenticels
sealed using a mix of glue and cork
powder resulting from the finishing of
stoppers and discs



“Agglomerated” stoppers

These are high-quality “coarse grain” cork
granules,
made from shredding offcuts from punching or
disc cutting.

These granules are calibrated and glued using
specific food-grade glue.



“Technical” micro-agglomerated stoppers

These are high-quality “micro grain” cork
granules,
made from shredding offcuts from punching or
disc cutting.

These granules are calibrated and glued using
specific food-grade glue.

Source : planeteliege.com Photo credits: RESSICAUD/Bourrasé



The benefits of cork

When in contact with wine, cork provides the following benefits:

Extraction of dozens of volatile and semi-volatile phenolic compounds: antioxidants, anti-carcinogens, anti-inflammatories. These compounds will react with those found in the wine.

The new constituents contribute to the stability, color and organoleptic properties of wine over time.

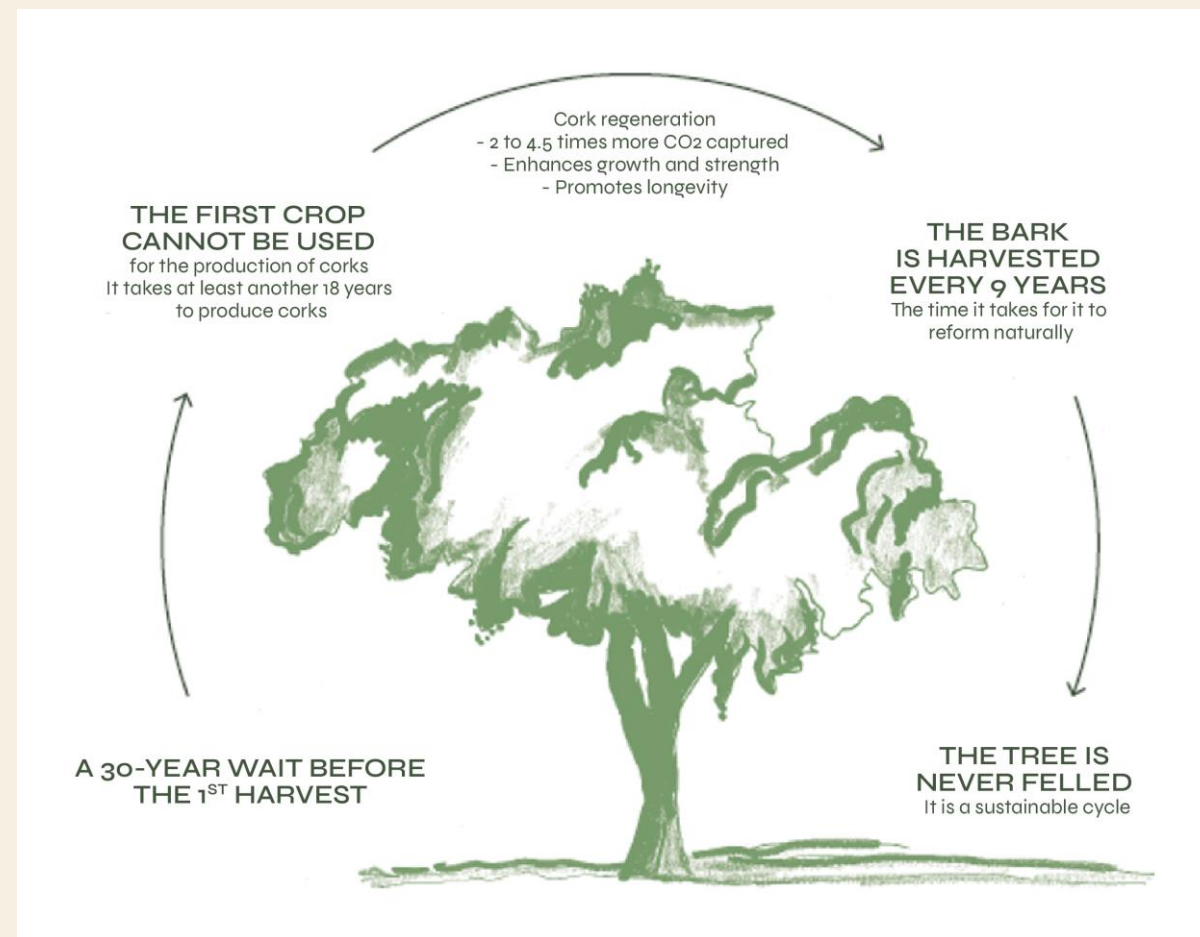
Aromatic preservation:

Natural cork closures help to preserve the wine's aromas (fruity, floral). They play a key role in the development of the wine's aromatic profile and flavours.

Alternative closures:

Synthetic stoppers, screw caps, glass stoppers

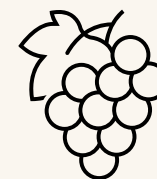
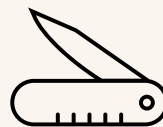
Choice according to expectations in terms of development over time, support and consumption rotation



100% bio-sourced/renewable/recyclable



SUMmary OF LEVERS FOR ADAPTING TO CLIMATE CHANGE



Plant material

- Clonal diversity and intra-varietal diversification
- Diversity of grape varieties
 - Heritage grape varieties
 - Foreign grape varieties
- Use of rootstocks adapted to drought

Vineyard situation

- Agroforestry
- Agrivoltaics
- Planting density
- Vine row aspect

Vine training

- Formative pruning
- Late pruning
- Height of the canes
- Leaf-to-fruit ratio
- Shade cloth – Net
- Irrigation

Oenology

- Acidifying yeast
- Yeast producing low alcohol contents
- Physical desugarization processes
- Physical dealcoholization processes



CSR policy of Bordeaux wines

Bordeaux's changing



THE SUSTAINABLE ROUTE OF BORDEAUX WINES



Acceleration of environmental certifications

In 2023, **over 75% of the area under vine** was certified by an environmental initiative.



Development of sustainable and regenerative viticulture

Investment of over **1 million euros** per year in R&D studies to support the transition of companies



Reduction in the industry's greenhouse gas emissions

2030 objective: **54% reduction in greenhouse gas emissions** compared to 2007



Commitment to a Corporate Social Responsibility policy

Over **3,600 employees** at **102 companies** certified "Sustainable impact" in 2024

CSR acts as a compass to guide Bordeaux negociants and winegrowers and raise their awareness of their social, societal and environmental impacts to ensure a sustainable future.



Sustainable Impact, a reference framework based on ISO 26000 standard and adapted to industry challenges and activities



**An initiative founded
on 4 challenges and
14 commitments.**

**Promoting
dialogue**

**Bringing our
region to life**

**Contributing
to an
attractive
industry**

**Protecting the
environment**



Sustainable impact, the strength of a **collective** strategy



- **COMPREHENSIVE**: all sustainable development challenges taken into account
- **SHARED**: key industry players involved since the beginning
- **COLLECTIVE**: all industry stakeholders committed – winegrowers, cooperative cellars and negociants
- **PRAGMATIC**: co-designed with all those involved
- **FOUNDED** on an industry reference framework
- **MONITORED** via regular internal audits and certified by an independent third-party organisation

Sustainable Impact, a reference framework based on ISO 26000 standard and adapted to industry challenges and activities.



About us

Today,

82

companies are certified
throughout the Bordeaux
region*



59 wine estates



19 negociant
firms



2 cooperative
cellars



9,227 hectares
of vineyards



3,318
employees



Over 30%
of wine volumes

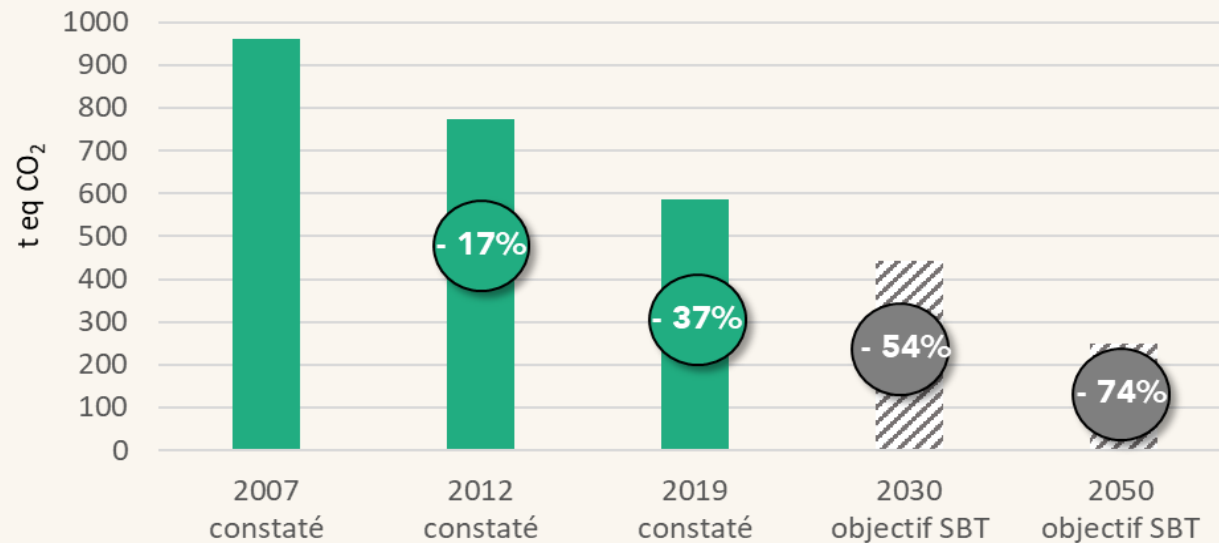
Winegrowers take action to reduce the GhG emissions



Paris Agreements: goal of limiting global warming to 1.5°C or well below 2°C above pre-industrial levels

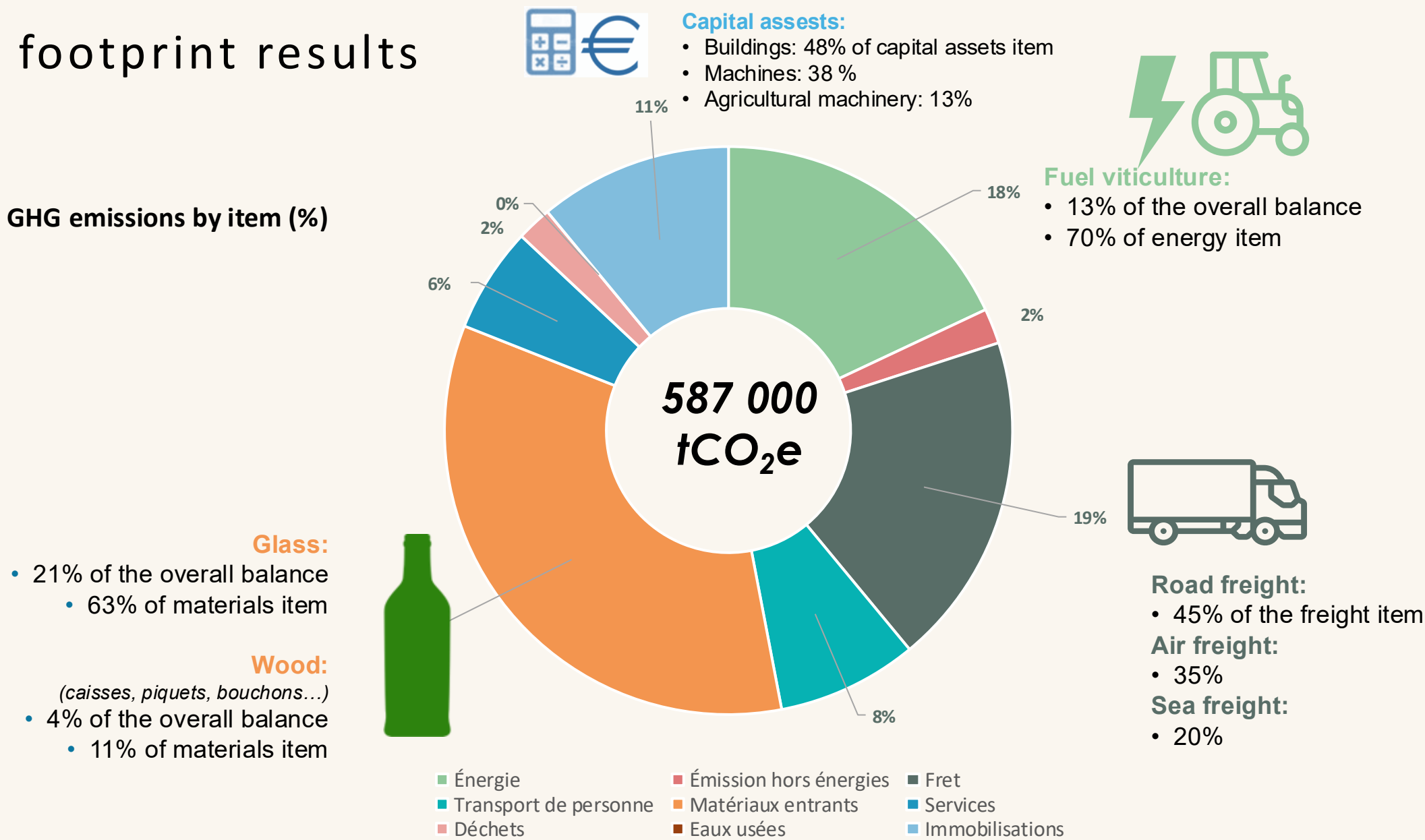
**-54% OF
EMISSION BY
2030**

« Science-Based Targets » approach (SBT) :
reduction targets in line with a 2°C trajectory

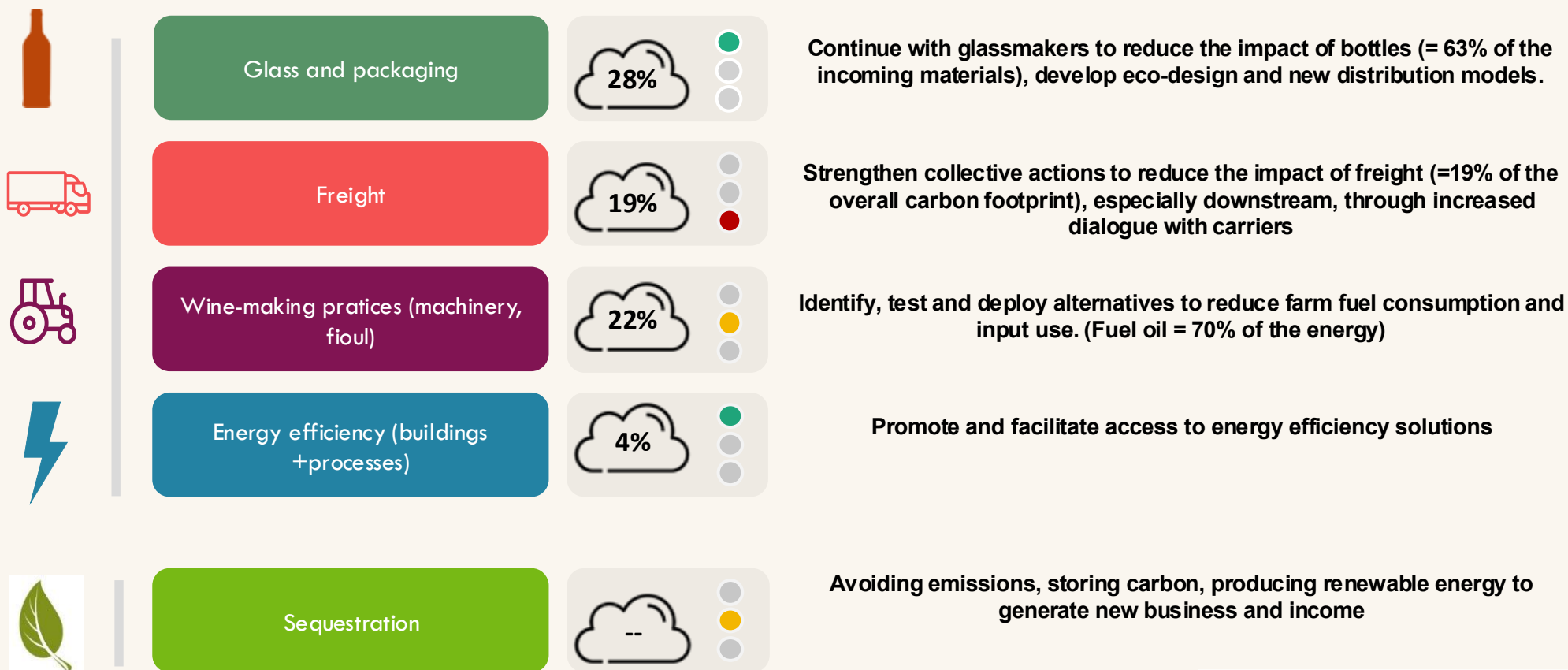


Carbon footprint results 2019

Breakdown og GHG emissions by item (%)



Carbon plan 2030: 5 strategic focuses



They dit it!



VIGNOBLES ANDRE LURTON

600 ha, HVE (5 properties)

AOC: Pessac-Léognan, Entre-deux-Mers, Bordeaux

Train female employées as tractor drivers – a job traditionally reserved for men.

Tests on working using exoskeletons are to be carried out.



CHÂTEAU LUCHEY-HALDE

23 ha, Iso 14 0001 and SME

AOC: Pessac-Léognan

Limit vine monoculture and promote crop diversity.

Saveguard local species.

« The Luchey-Halde vineyard has 2 characteristics that set it apart:

- it is a classroom vineyard for agronomy engineering students

from Bordeaux Sciences Agro (BSA)

- it is a wine estate located in Mérignac in an urban setting. » Pierre Darriet, estate director



VIGNOBLES ROUSSEAU

77 ha, HVE, Iso 14 0001, SME and Terra Vitis

AOC: Pomerol Lalande de Pomerol, Lussac, Bx sup, Bx

Help young adults with intellectual disabilities or behavioural disorders to find suitable employment.

Experiment with new grape varieties less exposed to early frosts and corresponds to classic

Bordeaux harvest dates (Marselan).



For a sustainable vineyard!



The wine sector
represents around

50 000
jobs in the Gironde



24% of vineyard areas certified or under
conversion to organic viticulture by 2024



**NO.1 ORGANIC WINEGROWING
DEPARTMENT IN FRANCE**



85%
of grassed areas,
a source of
biodiversity



75%
of the vineyards
are certified by
an environmental
initiative

Objective: 100% in 2030



Gironde is the,
NO.1 HEV
(High Environmental Value)
with 60% of vineyard
area by 2024



-39%
decrease in
greenhouse gas
emissions between
2007 and 2020



€1 million invested in research, including

400 000 € every year in
research to reduce the use of pesticides





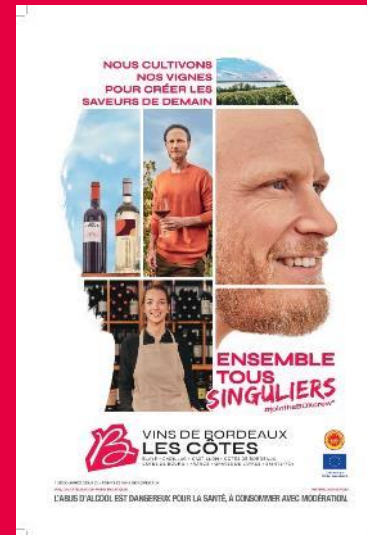
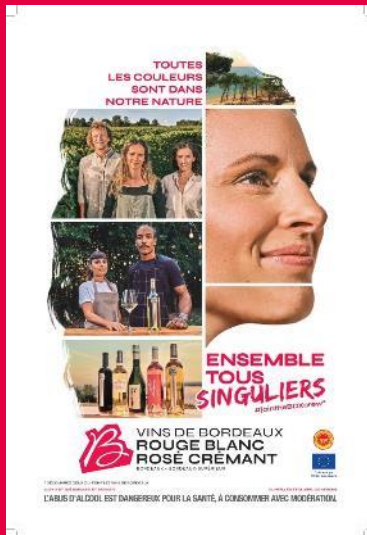
Bordeaux's changing

New experiences

In 2024, a joint narrative to make an impact, modernise the image and rekindle interest

In 2024, Bordeaux wines are taking to the stage together, in France and abroad, to tell the world about their diversity, their men and women, their vineyards, their sustainable commitments and their wines.

**ENSEMBLE
TOUS
SINGULIERS**
#jointheBDXcrew





Bordeaux immersive map





Share your experience:
#JointheBDXCrew
@Ecole du vin de Bordeaux – CIVB



Bordeaux'S CHANGING



www.bordeaux.com

A new, informative website where you can find out everything about Bordeaux wines:

- Technical articles
- Lifestyle news
- An interactive map
- And much more!



PRESENTING Bordeaux



Visit our website

ecoleduvindebordeaux.com



#JointheBDXcrew



Funded by
the European Union

37 AOP

65 AOP products

The bordeaux vineyard



1. **FDC33:** Reconstitution of ecological corridors in winegrowing areas
2. **A&P33:** Inventory, activities, consulting and development of agroecological structures using local species in the winegrowing area

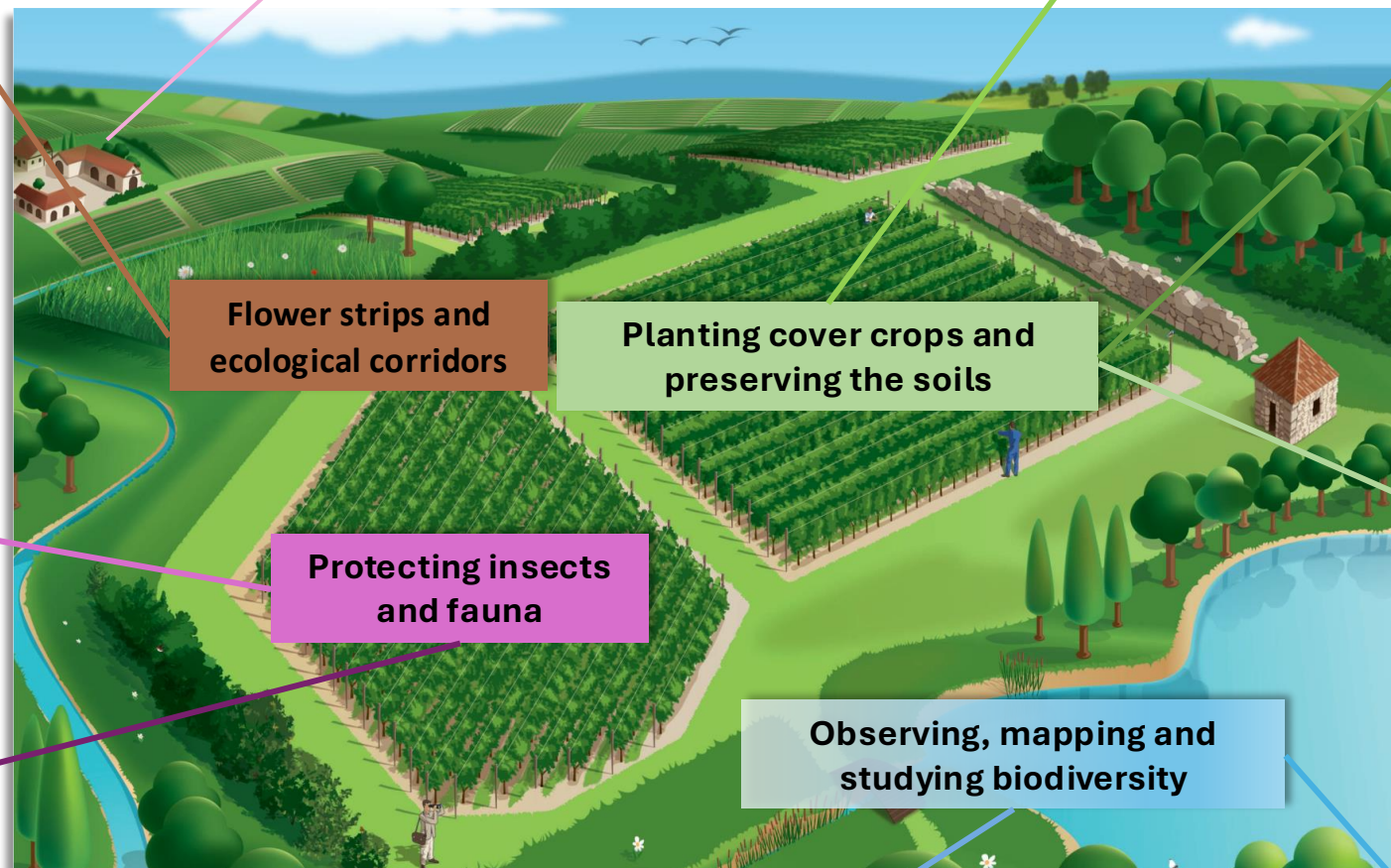
1. Wines without SO₂
2. BrettLess

1. **SOLAR:** Soil fertility and vine dieback

1. **Indicator of the biological quality of the soils**
2. **VITIRHIZOBIOME:** Role of the rhizosphere microbiome and of roots for young vines
3. **HOLOVITI:** Developing tools to assess the health of vine plots based on the micro-organisms which interact with the vine

1. **ALTFONGI:** Platform for testing biocontrol products sold

1. **LPO:** Role of bats in the fight against grapeworms



Flower strips and ecological corridors

Planting cover crops and preserving the soils

Protecting insects and fauna

Observing, mapping and studying biodiversity

1. **VERTIGO:** Promoting winegrowing practices which protect the soils in the Bordeaux wine region
2. **EXTRACUIVRE:** Extracting copper from the soil

1. **Vineyard flora:** Inventory of wild flora in vine plots in the Gironde
2. **GRAPE VARIETIES:** Management of conservatories
3. **VITADAPT/GREFFADAPT:** Comparison of grape varieties/rootstocks

1. **ALAMBIQUE:** Understanding the benefits of biodiversity on the ecosystem
2. **ENDLESS:** Characterization of soil biodiversity
3. **PHYTAE:** Implementation of agroecological practices in wine appellations

Glass and packaging

A guiding principle

Continue working with glassmakers to reduce the impact of bottles, develop eco-design packaging and new distribution models

3 key objectives

- 10% additional reduction in the average bottle weight
- 10% increase in the average cullet content
- 10% bottle reuse rate



- 28% of the wine industry's carbon balance
- Reduction potential: 33,000 t CO₂eq
- -6% of the industry's carbon footprint

Tangible actions

- Example: 100% reuse during Bordeaux Fête le Vin
- Eco-design packaging tools in partnership with Adelphe
- White papers about reuse
- Various work groups: reuse, glassmakers, etc.

freIGHT



- 19% of the wine industry's carbon balance
- Reduction potential: 28,000 t CO₂eq
- -5% of the industry's carbon footprint

A guiding principle

Strengthen joint actions to reduce the impact of freight, particularly downstream, thanks to enhanced dialog with carriers

3 key objectives

- 30% of volumes currently transported by road freight transferred to alternative modes (rail, sea)
- 90% of road freight volumes are currently transported by environmentally-committed haulage companies (Objectif CO₂ and Fret 21 labels, renewable energy commitments, etc.)
- 40% of volumes currently transported by air freight are substituted and rationalized

Tangible actions

- Regular discussions with the Port of Bordeaux, carriers, charterers
- Map of environmentally-committed companies
- Work groups: urban freight distribution, sail-assisted transport, Bordeaux Négoces

WINEGROWING PRACTICES



- 22% of the wine industry's carbon balance
- Reduction potential: 30,000 t CO₂eq
- -5% of the industry's carbon footprint

A guiding principle

Identify, test and roll out alternatives to help reduce the use of agricultural fuel oil and input products

2 key objectives

- 15% of agricultural engines to be run on electricity
- 75% of wine companies to be trained in eco-driving practices

Tangible actions

- Eco-driving technical fact sheet (to be published)
- Promotion of eco-driving training courses and the use of combined tools
- Monitoring robotic innovations

Energy efficiency OF BUILDINGS AND PROCESSES



- 4% of the wine industry's carbon balance
- Reduction potential: 2,300 t CO₂eq
- -0.3% of the industry's carbon footprint

A guiding principle

Promoting and facilitating access to energy-efficient solutions

2 key objectives

- Rolling out a shared self-consumption solar energy production program
- Promoting the development of “energy CUMAs” (agricultural equipment cooperatives)

Tangible actions

- Follow-up of demonstration projects such as VitiSolar

Beyond reductions

A guiding principle

Sequestering, significant yet insufficient

Increasing storage

- Increasing green cover
- Planting and maintaining hedges
- Organic fertilization of soils
- etc.



- Objective: 100,000 t CO₂eq

Preventing emissions

- Recycling vine co-products
- Capturing fermentation carbon
- Prioritizing renewable energy, etc.