



Prospective and strategic aspects discussed with stakeholders in vine and wine production:  
Results of seven regional forums

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# The wine industry confronted by Climate Change Horizon 2050

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LACCAVE PROJECT



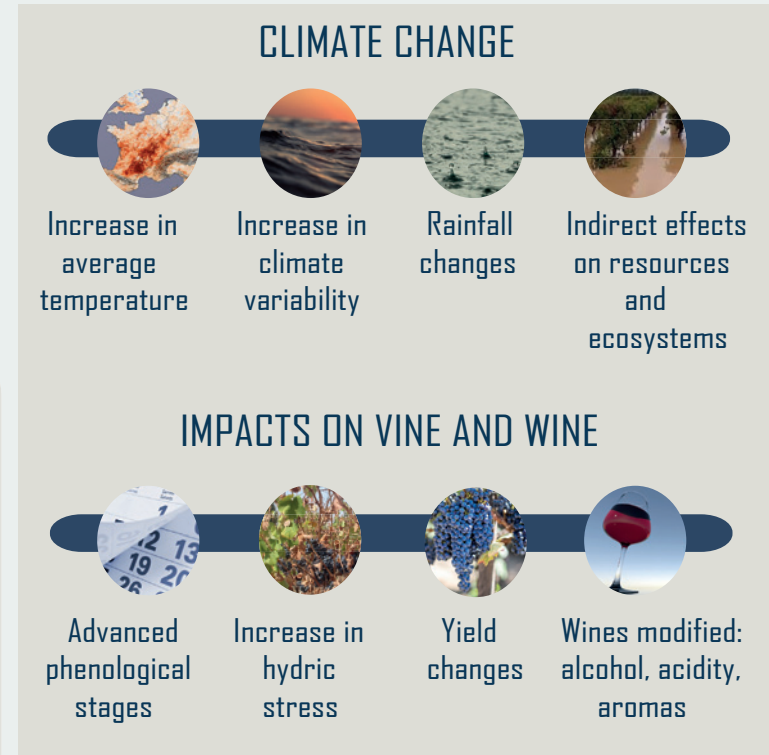
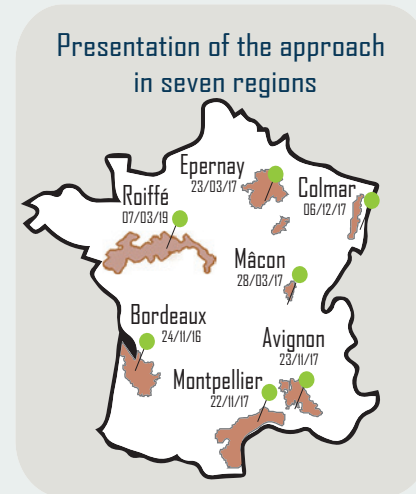
**INRA supported the LACCAVE project (2012-2016) in order to study the impacts of climate change and possible adaptations within the vine and wine sectors. This project involved 24 laboratories (INRA/ CNRS/ Universities) and 90 researchers and students from different scientific fields (climatology, genetics, agronomy, oenology, economy...). One of the flagship actions of the project has been the organization of an exercise on prospective.**

### The objectives of the exercise on prospective :

- Identify and explore different adaptation policies for the French vine and wine sectors within the context of climate change, to the year 2050
- Test a method for elaborating « pathways » that facilitate the implementation of these strategies
- Develop common vision and networking between researchers and stakeholders

### The six stages of the construction of pathways for adaptation

- 1 Propose a systemic representation of the vine and wine sector
- 2 Select a climate scenario for 2050, set out context development
- 3 Predefine 4 major adaptation strategies
- 4 Collect, select and combine hypotheses related to these strategies
- 5 Describe pathways that support the adaptation strategies until 2050
- 6 Organize participative forums in seven vine growing regions to specify and debate these pathways with stakeholders



### To adapt to climate change: 4 major fields of research and action



**Test and combine technical innovations**  
 Later varieties, drought and disease resistant, producing less sugar and more acidity.  
 New vine growing and wine producing practices.  
 Water and soil management...



**Spatial reorganisation of plantations**  
 Climate diagnosis of local terroirs to capitalise on their heterogeneity. Altitude or orientation changes.  
 Creation of new vineyards...



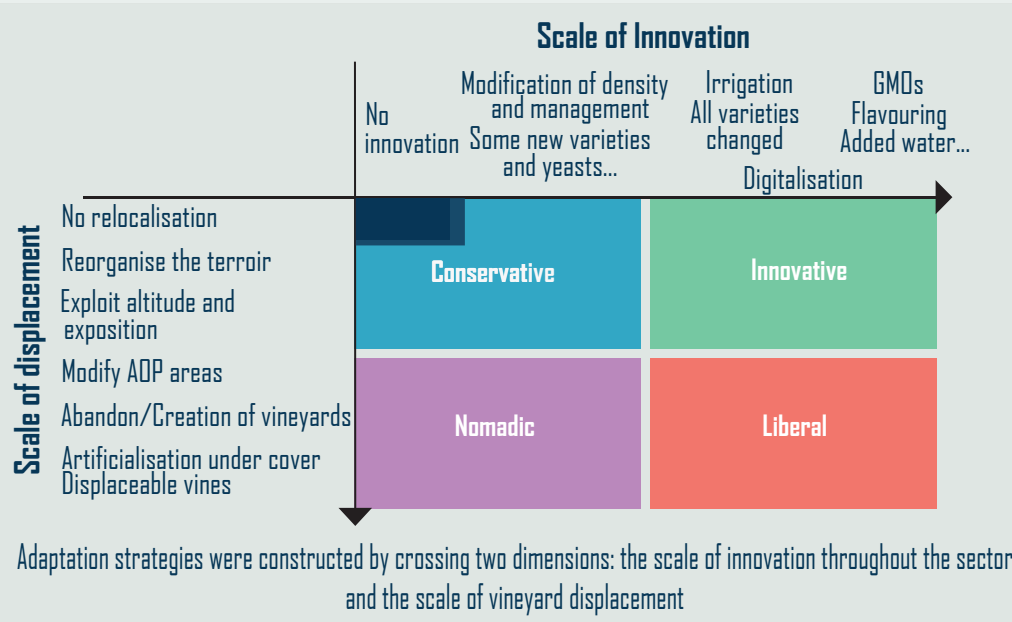
**Work for regulation modifications**  
 Modify production specifications. Climate policy for the whole sector. Research and development projects at the territorial level. Global risk management...

**Involve stakeholders and consumers**  
 Analysis of consumer perceptions.  
 Co-construction of solutions at different territorial levels.  
 Communication on adaptation and reduction of CO<sup>2</sup> emissions

# The 4 major adaptation strategies and pathways

Faced with pressure from Health Authorities concerning alcoholic drinks and of land and water management that gives priority to food crops, the sector, hardly connected with research work, perceives climate change as a menace. Production has become unpredictable in quantity and quality, with aromatic profiles that have evolved, but without having been rejected by consumers. Vine growing has globally shrunk, even if numerous IGP and AOP vineyards constitute pockets of resistance. Wine valorization remains linked to its cultural and landscape associations.

## CONSERVATIVE



In a context where environmental and health questions are more limitative and where agricultural space is regulated to reserve fertile land for food production, research has been in strong demand. The evergrowing introduction of innovations in both vine and wine management has maintained vineyards around existing zones, with more diversified wine profiles. The governance of the whole sector has widened to incorporate new categories of stakeholders.

## INNOVATIVE

In a context marked by a restrictive policy concerning alcohol and by research work focalised on reducing inputs, the vine growing sector lacks the know-how to maintain itself in the same zones and to guarantee the consistency of quality that consumers expect. It chooses to valorize the notoriety of labelled vineyards in different territories or to go down onto the plains to find water.

## NOMADIC

In a context less regulated and quite favourable for the wine market, new investors, at production and especially at trading level, lead to a redeployment of vine growing between irrigated zones, some terroirs of established notoriety and new vineyards benefiting from climate change. Personalised wines or labelled regional wines persist, but the offer is mainly composed of technological wines controlled by a few firms who implement a wide panoply of oenological innovations. Climate instability, competition between vineyards, deregulation and downstream domination finally fragilises traditional vine growing businesses which can not fully benefit from research and development work.

## LIBERAL

# What participants said on each strategy

*We are in 2050.....*

## CONSERVATIVE

## INNOVANTE

### Techniques

Valorisation of clonal and varietal diversity – new rootstock – greater respect of the environment – valorisation of the vintage effect – reinforcement of health monitoring – soil management

New vine varieties and rootstocks – remedial oenological solutions – wide diversity of winemaking techniques – growth of digital vine growing, agroecology, agroforestry

### Market

Development of the top of the range market and of direct sales – preservation of the diversity of what's on offer – France remains a reference on the wine market – eco-citizen label

New low input wines – new wine-based products – wines from resistant varieties – product range moving towards responsible wines – increase in prices – innovations in marketing, commercialisation, services

### Sector

Maintaining of professional research and development – creation of a climate change surveillance organization – development of technical groups supported by local authorities

Introduction of the civil society into sector governance – relaxed specifications – public acknowledgement and funding of innovation – risk pooling – insurance generalisation – strengthened role of interprofessional organisations

### Territory

Continued employment of technical advisors – development of wine tourism – installation of neo-rural people – services rendered by vineyards to the environment – fire control – conservation of certain landscapes

Investment structures to maintain links between the land and production – new profession of digital advisor – BIG DATA management by territory – innovative vine growing ecosystems

### Techniques

Irregular wine quality – lower yields – few major technical advances – irrigation becoming more and more limited – loss of technical competence – reduced links with research

Strong need for financing, so technology not accessible to all – loss of diversity and sense of history – robots everywhere? – conflictual situations over water resources – new hillside cultivation difficult

### Market

Market volumes uncertain – wine becomes an elitist product and expensive – consumption in France diminished and segmented – difficulties at the bottom of the range – lost markets linked to certain product characteristics (freshness)

Increased production and insurance costs – more and more ADPs replaced by IGPs and VSIGs? – opposition between elitist and popular markets – reduced middle of the range offer – increased influence of large supermarket chains

### Sector

Less research and development – enfeeblement of technical and interprofessional organisations, of the INAO – fewer vine growers and loss of influence for the sector – health and environment pressure

Weakening or renewal of the role of the INAO and of the ODGs – marginalisation of small vineyards – development of control bodies

### Territory

Increased land prices – reduced influence for cooperatives and traders – fewer stakeholders and jobs in the sector – abandoning or modification of certain landscapes – landscape and biodiversity modifications

Reinforcement of society's expectations – profession of vine grower becoming more technical – property no longer kept up by farmers – emergence of big and brand name stakeholders



*Which techniques have been modified? Which markets have been affected?*

*Which of the sector's organisations have seen their role modified? Which stakeholders and territories have been impacted?*

## NOMADIC

Development of resistant varieties – new combinations soil/climate/plant material – mechanisation – crop diversification – production cost reduction? – attractiveness of the North

New consumers – new brands and geographical indications – democratisation of wine – contents lightened

New investors and new products – the sector swings between dynamism and risk taking over new territories

Possible return to polyculture – development of international trading – displacement of vine and wine sector economic zones – appearance of new vineyards

Disappearance of local know-how – emergence of new diseases – inter-vintage and inter-variety blending – grape harvest displacement deteriorates carbon footprint

Drop in quality – « shockwave » throughout the sector – widening of the gap between industrial wines and small producers' elitist wines – gastronomic produce in danger of being replaced by agri-food products

The governance in place disappears (ODGs, interpro organisations, INAO) – expansion of private and international control bodies – explosion of present day AOPs – development of private consultant bodies – difficulties for oenotourism

Concentration of operators (brands) – loss of the economic attractiveness of ancient vine growing regions – competition for land use and water access – conflictual relations concerning vine growing and food production sectors

## LIBERAL

Reduced production costs – smaller workforce, higher yield and energy efficiency – mechanisation/robotisation – development of technicity and marketing – intercropping

New markets – new consumers – appearance of new wines – innovation supported by business means fewer blocked situations, being reactive and creative

Fewer administrative constraints – fusioning of commercial wineries – business model diversification

New industrial professions (irrigation, decision support organisations, oenotourism) – « collective intelligence » between the land and finance – arrival of new investors

Privatised research – industrialisation of wine production – loss of diversity/typical characteristics – living material patented – test tube wine? – liberalisation of standards and controls – « off soil » cultivation

Two speed vine growing and wine production: niche wines (organic, regional)/ standardised industrial wines – disappearance of AOPs and IGP – unclear regulations – abandonment of the present definition of wine (adding water, aromas)

Very powerful marketing and governance by grouped buying organisations – disorganisation of the sector with reduced producer influence – uberisation/ amazonisation of wine – difficulties dealing with environmental issues

Hillside vineyards abandoned – landscape modification – concentration and disappearance of small producers, « survival of the fittest » – fragmentation of vineyards for the benefit of wine industrialists' supply hubs

Techniques

Market

Sector

Territory

Positive



Aspects

Techniques

Market

Sector

Territory

Negative



Aspects

# What participants chose and proposed

Which strategic postures ?

Options chosen by participants for each strategy

	Conservative	Innovative	Nomadic	Liberal
<b>Positive proactivity:</b> act today to help the implementation of this possible future	21	73	3	5
<b>Negative proactivity:</b> act today to block the implementation of this possible future	30	3	39	59
<b>Anticipative reactivity:</b> prepare for the implementation of this possible future	30	22	29	16
<b>Monitoring:</b> possibility of surveillance, to foresee if this future is emerging	16	1	27	18
<b>No attitude :</b> this proposition is without any particular interest	3	1	2	2
<b>Total :</b>	100	100	100	100

(% of 419 voters)

Ex: 21% of participants want to be proactive in helping to implement a conservative pathway, 73% an innovative pathway

What actions are envisaged ?

Participants' propositions to promote or to avoid each strategy

CONSERVATIVE	<p><b>The pathway towards a conservative strategy :</b></p> <p><i>Some are in favour of it and propose to...</i></p> <ul style="list-style-type: none"> <li>carry out research and development with vinegrowers for "reasonable" innovations on issues concerning the environment and the terroirs</li> <li>test agroecological practices and valorise local know-how</li> <li>test and accompany the development of old varieties or varieties from other regions</li> <li>communicate on present day wines, their links with terroirs, landscapes and climate</li> </ul> <p><i>Others want to avoid it and propose to...</i></p> <ul style="list-style-type: none"> <li>promote research and development and innovation with vine growers and decision makers</li> <li>inform and warn of vineyard vulnerability in the face of climate change</li> <li>favour technical changes and the revision of production specifications</li> </ul>	INNOVATIVE
	<p><b>Widely supported, the strategy of innovation is seen as a way of preserving an organised vine and wine sector, linked to the terroirs:</b></p> <p><i>To enable it participants propose to...</i></p> <ul style="list-style-type: none"> <li>support research, development and training in every field: resistant varieties, irrigation, dealcoholisation, mechanisation, new products... for innovations that are adapted locally</li> <li>accompany vine population renewal for both precision vine growing and wine production, with or without irrigation, and for organic production</li> <li>listen to, inform, educate consumers: invest in the marketing of climate change wines and the acceptance of new technologies</li> <li>reinforce collective organisations to support innovation, preserve vineyard localisations and the family based model, control the concentration and investors from elsewhere</li> </ul>	
NOMADIC	<p><b>The rejection of a pathway towards a nomadic strategy is motivated by a fear of loss of terroirs, landscapes and typicity of the wines</b></p> <p><i>To avoid it participants propose to...</i></p> <ul style="list-style-type: none"> <li>reinforce ODGs and study existing terroirs and surrounding areas</li> <li>support collective and trade union action, policies that defend the terroirs, product identity, avoid deregulation and remain vigilant</li> <li>increase consumer awareness and develop an understanding of the terroir, the sector's contribution beyond just wine: employment, landscapes, economy, culture</li> <li>develop research and innovations that preserve existing terroirs: varieties, rootstocks, irrigation</li> <li>innovate today to avoid this scenario</li> </ul>	LIBERAL
	<p><b>Opposition to a liberal strategy is strong as it is seen to question the basics of French wine production:</b></p> <p><i>To avoid it participants propose to...</i></p> <ul style="list-style-type: none"> <li>increase the involvement of wine growers and their organisations in research and development, vineyard management, economic tools, the governance of the whole sector</li> <li>protect the definition of wine (an original cultural drink) and its territorial roots: union and political action, communication, international lobbying</li> <li>create strong brand names to head origin appellations, implement a more aggressive marketing centred on terroirs, communicate on links with landscapes et culture</li> <li>maintain regulations that guarantee the products, manage access to property and resources, support the installation of (young) vine growers</li> </ul>	

## Options and propositions for action in each region

The principal options of the participants for each region (% of participants)

	Alsace	Bordeaux Cognac	Bourgogne	Champagne	Languedoc Roussillon	Rhône Provence	Val de Loire	Average
Positive proactivity <b>INNOVATIVE</b>	56	<b>82</b>	<b>83</b>	67	<b>82</b>	64	77	73
Positive proactivity <b>CONSERVATIVE</b>	<b>29</b>	14	10	<b>29</b>	24	17	23	21
Negative proactivity <b>CONSERVATIVE</b>	15	23	<b>48</b>	<b>43</b>	21	<b>44</b>	21	31
Negative proactivity <b>NOMADIC</b>	<b>61</b>	27	35	<b>59</b>	32	37	39	41
Negative proactivity <b>LIBERAL</b>	60	43	50	<b>67</b>	52	<b>71</b>	<b>67</b>	59

Ex: in Alsace, 56% of participants chose positive proactivity for an innovative strategy, 82% in Bordeaux or in the Languedoc

number in **bold**: highest %  
number in grey: lowest %

The principal themes of proposed action for each region (% of participants)

	Alsace	Bordeaux Cognac	Bourgogne	Champagne	Languedoc Roussillon	Rhône Provence	Val de Loire	Average
Research & development	85	88	87	80	79	80	85	83
Regulations	54	54	41	36	46	52	51	48
Communication & marketing	73	70	69	53	58	55	62	63
Terroir	<b>68</b>	63	59	47	58	<b>69</b>	62	61
Environment	<b>41</b>	19	26	16	<b>38</b>	20	<b>39</b>	28
Vine varieties	<b>46</b>	40	23	22	<b>46</b>	37	34	35
Irrigation	12	14	5	2	<b>42</b>	<b>31</b>	18	18
Oenology	19	<b>25</b>	23	11	14	23	24	20

Ex: in Alsace, 85% of participants made proposals concerning research and development, 46% for varieties, 12% for irrigation

## What was learnt and prospects

The forums held in seven regions provided an understanding of the vision of all the sector's stakeholders on possible pathways to adapt to climate change.

By a majority, the option retained is the innovation pathway, but with what limits: "innovate at all cost" or "innovate to remain"?

- The most divided vote concerns the conservative pathway, reflecting varying perceptions of the resilience of the existing vineyards.
- Rejection of the nomadic pathway is the majority position, but the question is still raised concerning the possible development of new vineyards, and their interest for present producers
- The liberal pathway is the most rejected. It is considered as a menace, leading to a disruption of all benchmarks and a loss of influence for vine growers.

More than 2700 leverage actions have been brought forward in order to favour or to oppose these pathways, covering four important fields: research and experimentation, regulation modifications, support of local solutions, training and communication.

Far from being a sole solution, the initiatives to be carried out at different territorial levels ought to integrate these leverage actions, taking into account market sectors and wine types, the indispensable protection of the environment and of health, and value creation throughout the sector. It would also be necessary to make progress in diminishing greenhouse gas emissions.

INRA pursues its participative scientific work in different regions where already existing initiatives will be accompanied and favoured. A national group set up by FranceAgriMer and INAO also valorises the feedback from these exercises in prospection to formulate a national strategy for "climate", taking into account specific regional characteristics.



For more information

**Projet LACCAVE**

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