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Public Support for Energy Development from French Vineyards

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ABSTRACT

In crisis for several years, the European wine industry has an under-exploited energy potential that complements, rather than competes with, wine production. This energy is produced within the vineyards themselves, using wind turbines and solar panels, but also by the vines themselves, by reusing their by-products and residues for the production of biofuels and biogas. The cost and technical complexity of these energy production facilities, as well as the unpredictable revenues they generate, necessitate substantial public support and, more broadly, a unified legal framework, both of which are currently largely lacking. The case of France is particularly interesting because of its ambivalence: it is certainly a European illustration of public support, with European Union law being implemented there, but also a country that symbolizes public interventionism and, as such, has developed original and innovative mechanisms in more ways than one.

Public support for energy in the wine industry is fragmented, hindering its development, sometimes even for the same energy source (solar, wind, biogas, and biofuels derived from vinasse and grape marc). Obstacles to maximizing public support can be identified in European law, national laws, and also in contracts between energy distributors and project developers. Regulatory solutions, as well as appropriate market mechanisms, could change the situation. Currently subject to a compartmentalized legal framework, energy produced in and by vineyards represents a neglected solution to both decarbonizing our economies and combating wine surpluses. Technological innovation must now be accompanied by equally innovative legislation!

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Introduction

1- At first glance, devoting an entire paper to the issue of public support for energy in the wine sector may seem excessive. The term 'public support' does not, in itself, carry any particular meaning here; it traditionally refers to that aspect of market regulation which, in public economic law, constitutes state aid, European Union Administrative Law, Second edition, Oxford University Press) [1]. Whatever their form, such aid is intended to back and, even more so, to steer the market (on the evolution of the role of the State in the energy market, see especially Kim Talus, EU Energy Law and Policy: A Critical Account, Oxford University Press, p. 269) [2].

The manifestations of this public support for energy produced in or by vineyards are, moreover, familiar and have long been recognised. This is the case with feed-in tariffs linked to a purchase obligation for electricity or gas. Winegrowers can, for example, enter into the well-known 'Eléctricité de France (EDF) Obligation d'achat' contract for the installation of photovoltaic panels on the roofs of buildings (see the dedicated website: https://www.edf-oa.fr/) [3]. No less significant are the tax credits and other grants facilitating the installation of a biomass boiler, fuelled, for example, by vine shoots. The crisis distillation aid, which aim to absorb cyclical production surpluses within the framework of the Common Organisation of the Markets (COM) in wine (see Regulation (EU) No 1308/2013 of 17 December 2013 establishing a common organisation of the markets in agricultural products, Official Journal of the European Union is also nothing revolutionary [4].

Finally, for experimental or large-scale projects, public support schemes do exist and, however original they may be, have also already been widely reported in the press. This is the case with the known as Vitisolar, which is currently being trialled in Bordeaux, France. Public funding from the Nouvelle-Aquitaine Region, the French Environment and Energy Management Agency (ADEME) and the European Commission made it possible to develop this project for photovoltaic shade structures over vineyards (see the project presentation on the Électricité de France (EDF) website: https://www.edf-renouvelables.com/le-groupe-edf-et-ses-partenaires-lancent-vitisolar-un-projet-experimental-dagrivoltaisme-sur-vignes-pres-de-bordeaux) [5].

2- The apparent calm surrounding the subject is, however, swept away like the blades of a wind turbine on a windy day.

Firstly, this public support takes on far more diverse forms than legal theory would initially suggest. Whilst the aim is to back and guide the market, it is just as much a question-as is always the case with the recycling sector and renewable energy-

of structuring it, if not actually building it, 'The regulation of sectors subject to extended producer responsibility', in M. BOUL and R. RADIGUET (eds.), Anti-Waste Law and the Circular Economy, Institut Francophone pour la Justice et la Démocratie-Louis Joinet, LGDJ, p. 155 & French Senate (2021), Information Report No. 872 drawn up on behalf of the fact-finding mission on anaerobic digestion in the energy mix: challenges and impacts by Mr Daniel Salmon, p. 200) [6,7]. Examples of this support go far beyond the few textbook cases just mentioned. They include a mix of general support schemes and those specific to certain renewable energy sources (wind, solar, biogas) or to combined heat and power; schemes that are permanent or activated in times of crisis. Furthermore, the term 'public' extends beyond the State as a legal entity to encompass local authorities and public bodies, and even private individuals with links to these public bodies. In the fields of biomass and photovoltaics, semi-public companies are a prime example of this.

Secondly, doubts and uncertainties are shaking the most firmly held convictions in the collective imagination. The need for public support to ensure the profitability of energy-generation facilities is presented as self-evident, Planetary economics: Energy, Climate Change and the Three Domains of Sustainable Development, Routledge, and regarding the French public policies Ministerial reply, Written Question No. 37337, Official Journal of the French National Assembly, December 2014, 23, p. 10707) [8,9]. Photovoltaic energy, however, puts this assertion into perspective, given technological developments (see the Energy Regulatory Commission or CRE 'Costs and profitability of large-scale photovoltaics in mainland France', 28 February 28, p. 2) as well as legal changes with the rise of over-the-counter electricity purchase contracts: Power Purchase Agreements [10]. The reform of the European electricity market introduced Article 19a into Regulation (EU) 2019/943 of June 5, 2019 on the internal market for electricity, entirely devoted to PPAs (on this subject, see recently Elena Andreea Niculescu (2025), Power Purchase Agreements in the Transition to Green Energy and Climate Neutrality, Springer) [11,12]. The second assumption concerns the scale of public support in this area. It may not be as substantial as appearances suggest: on one side of the scales is the Vitisolar showcase, but on the other is the red tape hindering the development of photovoltaics. Accelerating energy production inevitably requires speeding up the relevant administrative procedures, which is one of the objectives of European Union law (Directive (EU) 2023/2413 of 18 October 2023 amending Directive as well as French law [13].

Thirdly, there is a clear disconnect between the flood of news stories on the subject and the scarcity of available academic studies. On the one hand, there is the Renewable Energy Acceleration Act adopted on March 10, 2023 (Law No. 2023-175 cited above) and the the third edition of the Multiannual Energy Programme published by the French government on February 13, 2026 [14,15]. On the other hand, there are only a few comprehensive studies of the latest energy law reforms, or, conversely, very specific ones, such as those concerning Green certificates or in France biogas production certificates, Can green gas certificates allow for the accurate quantification of the energy supply and sustainability of biomethane from a range of sources for renewable heat and or transport ?, Renewable and Sustainable Energy Reviews vol. 115, 109347) as well as guarantees of origin (Martha Roggenkamp & al. (2016), Energy Law in Europe : National, EU and International Regulation, Oxford University Press, p. 340 s.) [16,17]. Ultimately, there is little material available, and even less so from the perspective of the wine-growing and wine-producing sector…

3- Nevertheless, public support schemes are a key component of France's ecological and energy transition. Following in the footsteps of the European Union (see the 2020 and 2030 Energy and Climate Packages), France has set itself ambitious targets for renewable energy through the Multiannual Energy Programme (PPE), introduced by the 2015 Law on the Energy Transition for Green Growth (Law No. 2015-992 of 17 August 2015, Official Journal of August 2015, 18 (amending Articles L.141-1 to L.141-4 of the Energy Code) [18]. It is in order to achieve these targets that this latter Act, the 2016 Order on the Adaptation of the Gas System (Order No. 2016-411 of April 7, 2016 introducing various adaptation measures in the gas sector, Official Journal of April 8, 2016), the Acts on Energy and Climate (Act No. 2019-1147 of November 8, 2019, Official Journal of November 9, 2019, the 2019 Mobility Policy Act (Act No. 2019-1428 of December 24, 2019, Official Journal December 26, 2019), the 2021 Climate and Resilience Act (Act No. 2021-1104 of August 22, 2021, on combating climate change and strengthening resilience to its effects, Official Journal of August 24, 2021) and the 2023 "APER" law (Law No. 2023-175 of March 10, 2023, Official Journal of March 11, 2023) relating to the acceleration of renewable energy production have partially reformed the public support schemes [19-23].

4- Precisely, how should we assess the evolution of these public support schemes for the wine sector? We need to break down the terms of the subject. First, 'support'. Its manifestations – the various forms of support – have proliferated to the point of undermining the effectiveness of public support as a whole: in short, there is too much support (1.). It is also the 'public' nature of this support that warrants discussion, as it aligns with an increasingly modern conception: it is not actually that public (2.).

Too Many Forms of Support

5- The statement sounds provocative and warrants explanation. This is not a matter of arguing that public support is too generous and, as a true disciple of Adam Smith, calling for the tap to be turned off. Rather, we must focus on a paradox: support schemes have probably never been so numerous (1.1.), yet public support does not simultaneously appear to be any stronger (1.2.).

Numerous Forms of Public Support

6- Feed-in tariffs are like the tree that hides the forest of public support schemes for the wine sector. Based on a dual legal foundation (public support for energy production and that granted to agriculture), they take a plethora of forms.

7- Feed-in tariffs set in advance by ministerial decrees, combined with a purchase obligation on the part of a designated purchaser, and supplementary payments made by the State to producers offering energy on the market are initially available in the renewable electricity and biogas sectors through an open-access scheme or via a tender process (article R. 311-12(1) of the Energy Code).

In the case of the open-access scheme, support is available to any eligible installation. The mechanism is simple and provides certainty for the producer, who is guaranteed remuneration from the outset under both the feed-in tariff scheme (with regard to renewable electricity sources, see Article L. 314-1 of the Energy Code ; for the list of eligible installations within these sectors, see Article D. 314-15 & seq. of the Energy Code ; for biogas injected

into natural gas networks, see Article L. 446-4 & seq. of the Energy Code) and the supplementary remuneration scheme (with regard to electricity-generating renewable energy sources, see Article L. 314-18 of the Energy Code ; with regard to biogas injected into natural gas networks, biogas producers may be eligible for supplementary remuneration where the majority of production is intended for mobility-related uses, see Article L. 446-7 & seq. of the Energy Code). The open-access scheme applies to small-scale installations, such as photovoltaic systems with a capacity of less than five hundred kilowatts peak (500 kWp, see Decree of October 6, 2021 setting out the conditions for the purchase of electricity generated by installations located on buildings, sheds or shade structures using photovoltaic solar energy, with an installed peak capacity of 500 kilowatts or less, as referred to in paragraph 3 of Article D. 314-15 of the Energy Code and located in mainland France (the so-called 'S21' Order), Official Journal October 8, 2021). Still on the subject of open-call photovoltaic schemes, the so-called 'S21' Order has recently been modified by removing the self-consumption bonus but also by simplifying administrative procedures for standard projects (Order of June 1st, 2026 amending the Order of October 6, 2021 setting the conditions for purchasing electricity produced by installations located on buildings, sheds or carports using photovoltaic solar energy, with an installed peak power of 500 kilowatts or less, Official Journal June 4, 2026) [24]. Nearly a dozen regulatory amendments have affected this text, contributing to the legal uncertainty surrounding energy law, the previous ones having amended it to better reflect changes in raw material costs and interest rates within the photovoltaic sector (Decree of February 8, 2023 amending the aforementioned Decree of October 6, 2021, Official Journal of February 17, 2023) [25].

In the case of the call for tenders (as in the case of a second possible competitive tendering procedure relating to renewable energy and combined heat and power, the competitive dialogue, also implemented (paragraph 2 of Article R. 311-12 of the Energy Code), the benefit of support, whether this takes the form of a feed-in tariff or supplementary remuneration, is restricted to the successful bidders in the procedures (with regard to biogas injected into natural gas networks, see Article L. 446-5 of the Energy Code). Those organised by the Energy Regulatory Commission (CRE) are the most common. Each bidder submits a purchase price for electricity or biogas, after which the CRE analyses these bids and eliminates some of them based on the criteria set out in each set of specifications, in particular the proposed price [26]. There are different categories of calls for tenders depending on the energy source, as well as the capacity and location of the installation. To focus specifically on solar photovoltaic energy, these calls for tenders are open to projects with a capacity exceeding 500 kWp (see the CRE's call for tenders concerning the construction and operation of solar power generation facilities "Building-integrated power plants, agrivoltaic greenhouses, carports, and agrivoltaic carports with a capacity exceeding 500 kWp" known as AO PPE2 PV Building of april 2026) [27]. Projects involving shade structures over vineyards, meanwhile, fall under the CRE's 'Innovative Photovoltaic Solar' call for proposals (see the call for tenders relating to the construction and operation of electricity production facilities from solar energy "Building-mounted power plants, agrivoltaic greenhouses, carports and agrivoltaic carports with a capacity greater than 500 kWp", still in progress in 2026 (https://www.cre.fr/documents/appels-doffres/appel-doffres-portant-sur-la-realisation-et-lexploitation-dinstallations-de-production-delectricite-a-partir-de-lenergie-solaire-centrales-sur-batiments-serres-agrivoltaiques-ombrieres-et-ombrieres-agrivoltaiques-de-puissance-superieure-a-500-kwc.html).

8- A number of other public support schemes operate in the shadow of these well-known flagship instruments. It would be futile to attempt to draw up an exhaustive list of them, given the wide variety of their forms, terms and conditions, and the legal status of their sponsors.

The French Environment and Energy Management Agency (ADEME) offer several financial support schemes for renewable electricity and biogas (the list of proposed funding schemes and some examples can be found on the ADEME website at https://agirpourlatransition.ademe.fr/entreprises/aides-financieres) [28]. For example, ADEME offers a grant to help companies carry out a carbon footprint assessment (see the 'Tremplin pour la transition écologique' scheme, introduced in 2021 and subsequently replaced by the 'Diag Décarbon'Action' scheme (see https://diagdecarbonaction.bpifrance.fr/). In the field of biogas, its 'Circular Economy' fund provides support for facilities utilising biogas through combined heat and power, whilst its 'Renewable Heat' fund is aimed at feed-in projects (for information on the support provided by ADEME, see the Senate's Information Report drawn up on behalf of the fact-finding mission on 'Anaerobic digestion in the energy mix: challenges and impacts' by Mr Daniel Salmon, Senate Official Journal, September 29, 2021, p. 48).

Calls for projects (CFP) are also regularly launched by the regions, such as in Nouvelle-Aquitaine for agrivoltaics. The Vitisolar demonstration project presented in the introduction is one of the successful applicants from the first round of this scheme, launched in 2019. Other calls for projects can be mentioned, such as the 'Innovative Energy Technologies and Vectors' call, which aims to encourage the production of renewable fuels, in particular from 'by-products of biogenic economic activities such as grape marc and wine lees' (see the 2026 edition, which can be viewed at https://les-aides.nouvelle-aquitaine.fr/transition-energetique-et-ecologique/technologies-et-vecteurs-energetiques-innovants) [29].

Financial support is also provided under the European Union's Common Agricultural Policy (CAP) via the European Agricultural Guarantee Fund (EAGF), used to help fund emergency distillation schemes, and the European Agricultural Fund for Rural Development (on EAFRD expenditure in this area (and, in particular, the shortcomings of the current system), see the European Court of Auditors, 'Renewable Energy and Sustainable Rural Development', Special Report No 05/2018, p. 42) [30]. In addition, there are tax measures such as exemptions and reductions in the flat-rate tax on network companies (IFER ; see also the domestic tax on natural gas consumption (TICGN) or the general tax on polluting activities (TGAP), as well as an increase in the rebate – in other words, the 'discount' – enjoyed by energy producers on the cost of connecting to the public grid (with regard to solar photovoltaic energy, see the Order of March 22, 2022 on the coverage, through the public electricity network usage tariff, of the costs of connecting renewable electricity generation installations to the public electricity networks, Official Journal of the French Republic March 2022, 26) [31].

Finally, this brief overview would be far too incomplete without mentioning the 'new' public support instruments offered by public labels – Bas-carbone (introduced by Decree No. 2018-1043 of November 28, 2018 establishing a 'Low-Carbon' label, Official Journal of November 29, 2018) or VertVolt (created by ADEME to promote the supply of green electricity [32]. See the page dedicated

to the label on the ADEME website: https://agirpourlatransition.ademe.fr/particuliers/vertvolt. The labelling guidelines can be downloaded from) – or, in this case in a binding manner, the scheme for guarantees of origin applicable to electricity generated from renewable sources or through combined heat and power (an electronic certificate demonstrating the renewable origin or cogeneration of a certain quantity of electricity, see Article R. 314-53 of the Energy Code). and, with regard to biogas, those for biogas guarantees of origin (like the guarantees of origin for renewable gas injected into the natural gas network, these guarantees provide proof for gas that is similar to that provided by the guarantees of origin applicable to electricity, see Article L. 446-18 of the Energy Code), renewable gas guarantees of origin (where renewable gas is not produced from biomass, the producer may only apply for the issue of guarantees of origin for renewable gas injected into the natural gas network, see Article L. 445-3 of the Energy Code) and biogas production certificates (natural gas suppliers are under an obligation to return these certificates, either by producing the injected biogas themselves or by purchasing them from producers, see Article L. 446-31 of the Energy Code).

9- However, the multifaceted nature of public support for the wine sector is no guarantee of its effectiveness.

Public Support is Not Necessarily Stronger Across the Board

10- Several factors limit the scale of public support for energy in the wine sector, despite the wide range of instruments available. Four main categories emerge.

11- The first factor is the lack of a public support scheme specifically for energy in the wine sector. Those that are applicable to it stem partly from support for energy production and partly from support for agriculture. Unsurprisingly, this situation is not unique to France. Public support for vitivoltaics thus stems from the implementation of general measures to support renewable energy (in Germany, for example) or is expressed more specifically through measures aimed at developing renewable energy in agricultural areas (in Japan and China, in particular). Energy generation in the wine-growing sector is more directly promoted when public support targets high value-added production, as is the case with the value-added producer grants scheme in the United States (for an overview, see ADEME (2021), 'Characterising photovoltaic projects on agricultural land and agrivoltaics', special issue, pp. 103–115) [33]. This is just one example among many of the measures currently in force in these two areas. It is fortunate that the winners of the CRE's 'Innovative Solar Photovoltaics' calls for proposals happen to be involved in viticulture, but this is obviously not their intended purpose. Given the focus of this symposium, this lack of specialisation is regrettable. From a more optimistic perspective, the dual legal basis for the wine-growing and wine-making energy sector could also be seen as an asset, a means of maximising public support. This is not the case, however: two pitfalls are becoming apparent.

Firstly, in the absence of sufficient and appropriate regulation of the energy sectors, the secondary risk is likely to take precedence over the primary one. The spectre of agricultural production being exploited for energy generation certainly looms larger over less profitable activities than viticulture, such as cereal farming or livestock rearing. Nevertheless, the risk exists both for energy produced in the vineyard and by the vineyard itself.

In vineyards, a conflict over land use can threaten wine production. Public intervention is therefore required to make energy support conditional and, more broadly, to prevent land being converted to non-agricultural uses. It is therefore only in exceptional cases that agricultural land may be used for agrivoltaic projects. It is within a category of the calls for tenders relating to innovative installations that agrivoltaic projects on agricultural land (as defined in town planning documents) are authorised (see case no. 4, as defined in the specifications of the CRE's call for tenders concerning the construction and operation of innovative solar power generation installations without storage systems ('AO PPE2 PV Innovant'), which can be downloaded from https://www.cre.fr/documents/Appels-d-offres/appel-d-offres-portant-sur-la-realisation-et-l-exploitation-d-installations-de-production-d-electricite-innovantes-a-partir-de-l-energie-solaire-sa) [34]. Within the framework of the CRE's photovoltaic calls for proposals, the 'demonstrable operational synergy' (see p. 9 of the specifications for the aforementioned PPE2 PV Innovant call for tenders) between the primary activity of agricultural production and the secondary activity of energy production is traditionally valued. The definition of 'agrivoltaics' subsequently provided by the legislator (article L. 314-36(I) of the Energy Code, introduced by Article 54 of the aforementioned Law No. 2023-175 of March 10, 2023 on accelerating the production of renewable energy) builds on these initial efforts by the public authorities to accelerate the development of renewable energy where space permits, without compromising land use.

It is also a question of use – but this time of the harvest rather than the land – when it comes to the energy produced by vineyards. The threat here is more ambiguous and indirect. It concerns the distillation schemes under the common organisation of the market in wine. Critics have claimed that these schemes encourage winegrowers to sell their grapes to distilleries-and thus potentially generate energy (French Senate, Information Report No. 348 on the reform of the Common Organisation of the Market in Wine by Mr Gérard César, Official Journal of the Senate of June 22, 2007, p. 26)-rather than producing wine for consumption [35].

Secondly, there is a risk that the legal foundations of the wine-growing and wine-producing sector could be undermined. Trying to have it both ways – public support for energy production and for agricultural production – does not guarantee that support will be doubled. Land-related aid under the Common Agricultural Policy demonstrates this. When a farmer installs a ground-mounted photovoltaic power station, entitlement to basic payment entitlements (BPEs) is no longer guaranteed (ADEME (2021), 'Characterising photovoltaic projects on agricultural land and agrivoltaics', document cited above, p. 91) [33].

12- The second factor limiting the scope of public support relates to the partly virtual nature of the renewal of its instruments.

On the one hand, announcements are, unfortunately, followed by action only after a long delay. With regard to the low-carbon label, a 'viticulture' or 'vine and wine' methodology has been under consideration for five years, without any results at this stage (French Institute of Vine and Wine, 'The wine sector's commitment to carbon neutrality', July 8, 2021, available at https://www.vignevin.com/article/lengagement-de-la-filiere-vin-vers-la-neutralite-carbone)! It is sometimes the legislative provisions that remain a dead letter for several months, if not several years [36]. The necessary implementing decrees and orders are slow to be published. Recent events have once again demonstrated this in relation to the CRE's calls for tenders provided for in the Order on the adaptation of the gas sector (Article 1er of Order No. 2016-411, cited above) and the Mobility Framework Act (Article 71 of Act No. 2019-1428, cited above), as well as the pilot scheme

contracts and transfers of guarantees of origin under the Energy and Climate Act (Articles 33, 50 and 61 of Act No. 2019-1147, cited above).

Furthermore, once they come into force, certain instruments compete with one another. This undermines their visibility and affects the clarity of the public support scheme as a whole. The proliferation of labels is now symbolic of this, with the toxic relationship between the guarantees of origin mechanism and the VertVolt label (on the competition between these different environmental quality guarantees, see recently CRE (2026), Mise en oeuvre de la systématisation de la surveillance de la cohérence des offres et panorama des offres de marché souscrites par les consommateurs résidentiels, Rapport n° 2026-06, p. 10) [37].

13- Thirdly, there are more pernicious obstacles to maximising public support.

The European legal framework is one such obstacle. To focus specifically on European state aid law (on the applicability of Articles 107 to 109 of the TFEU in the agricultural sector, see Article 211 of the Wine CMO Regulation No. 1308/2013, cited above), this takes the form of prior scrutiny by the European Commission of any changes to public support that might threaten competition and trade between Member States. However, exceptions are occasionally permitted. Before raising the 'one-stop shop' threshold from 100 to 500 kWp PV or the feed-in tariff for biogas, France therefore first had to obtain the European Commission's approval. Crisis distillation of wine is in fact governed by the Common Organisation of the Market in Wine and Commission intervention (Article 216 of the CMO Regulation No 1234/2007).

Furthermore, the State often gives with one hand and takes away with the other. Photovoltaics is a good example of this, through the temptation to subject to property tax or to recoup excess profits from renewables (also see the cap on market revenues of sub-marginal producers, particularly photovoltaic, implemented by Law No. 2022-1726 of December 30, 2022 on the 2023 budget, Official Journal December 2022, 31) [38]. Biogas is no exception, as demonstrated by changes to the conditions for accessing feed-in tariffs and supplementary payments, as well as the end of the exemption from the domestic tax on natural gas consumption (TICGN) that biogas fed into the networks had enjoyed until the 2020 Finance Act (Article 67 of Law No. 2019-1479 of December 28, 2019 on the 2020 Finance Act, Official Journal December 29, 2019) [39]. Another example is provided by recent news, the French regulatory authority having decided to end the so-called "BG16" purchase tariff for new biogas-fired electrical installations in 2025 (Order of September 8, 2025, amending and then repealing the Order of December 13, 2016, setting the purchase conditions for electricity produced by installations mainly using biogas produced by methanization of non-hazardous waste and raw plant matter located in mainland France with an installed capacity strictly less than 500 kW as referred to in point 4° of Article D. 314-15 of the Energy Code and amending the contractual terms of installations that can benefit from the obligation to purchase electricity defined by the Order of May 19, 2011 setting the purchase conditions for electricity produced by installations that utilize biogas, Official Journal September 9, 2025) [40].

Finally, when it is not the State that takes its share of public support, the private sector steps in, exploiting the confusion – if not the disarray – of energy project developers. Faced with the complexity of the support scheme, many give in, for a fee, to the enticements of companies specialising in securing public funding, particularly when responding to calls for tenders. The European Commission itself has acknowledged these perverse financial effects of the increasing complexity of renewable energy law (see Recommendation (EU) 2024/1344 on speeding up permit-granting procedures and renewable energy auctions, Official Journal of the European Union, May 2024, 21) [41].

14- Finally, as in any field, theory must be distinguished from practice. The implementation of public support schemes is proving to be both unequal and increasingly restrictive. Unequal, if only from a geographical perspective. Local public support schemes thus vary from one region to another. They are also becoming increasingly restrictive. This is demonstrated by the evolution of the feed-in tariff scheme and the remuneration supplement for electricity generation and feed-in. This is all the more true of combined heat and power.

15- There is plenty of support, but this does not necessarily translate into better support for the wine-growing sector. Public support is also available, but here the balance of quantities is reversed.

Support that is not so 'Public'

16- We need to agree on the meaning of the adjective 'public' when discussing public support for the wine-growing and wine-producing sector. From an organisational perspective, this support does not necessarily come from public bodies but also involves private entities (2.1.). From a practical perspective, it relies increasingly on market mechanisms, which do not always remain under the control of public bodies (2.2.).

Public Support Provided by Private Entities

17- At this stage of the discussion, the focus has consistently been on the State, public bodies or local authorities. However, private individuals also play a leading role, under the supervision of public bodies, in the implementation of public support schemes, thereby enriching both the objectives of public support and the rules governing it.

18- With regard to the objectives, the involvement of these private entities reveals a facet of public support that is both more social and more local in nature. It is more social through the involvement of public investment banks. Bpifrance has developed investment aid in the form of unsecured loans to address potential financing difficulties. In the field of anaerobic digestion, for example, 'Agricultural Anaerobic Digestion' and 'Anaerobic Digestion with Gas Injection' loans are offered. Paradoxically, the involvement of private individuals also reflects a more local approach through the role of local public enterprises: public limited companies – they too! – set up on the initiative of, in particular, local authorities and their associations to support their regional economic development policies, in this case in the energy sector. The historic symbol of this is the local semi-public company (in French Société d'économie mixte locale or SEML), the majority of whose capital is held by public bodies, starting with energy consortia (Law No. 83-597 of July 7, 1983 relating to local mixed-economy companies, Official Journal of July 8, 1983; see Emilie Hersant (2010), Les collectivités territoriales et le secteur énergétique, thesis, University of Orléans, p. 113) [42,43]. Throughout France, 'SEM EnR' companies are being set up to develop, finance and operate renewable energy generation facilities, whether solar, wind or biogas.

19- Furthermore, with regard to the rules governing this public support for private entities, recourse to such entities does not allow one to circumvent the constraints arising from European state aid law or even public procurement law. On the other hand, legal personality under private law offers greater freedom and flexibility. In the case of the SEML EnR, capital contributions by private individuals are thus possible, as are equity investments in other companies, the creation of subsidiaries of the SEM EnR, or even involvement beyond the remit of the departmental energy associations, if only from a geographical point of view.

20- These private individuals, alongside public bodies, are relying more than ever on market mechanisms.

Public Support Through Market Mechanisms

'New' instruments of public support have already been distinguished from the various schemes traditionally deployed to support the wine-growing energy sector. This distinction now needs to be clarified. There is, in fact, a fundamental difference between, on the one hand, feed-in tariffs, supplementary payments, taxation and other forms of public aid, and, on the other hand, schemes for guarantees of origin and biogas production certificates, to name but a few. The former are not only traditional because they have been in place for a long time, but also because they are budgetary or fiscal in nature. The latter, on the other hand, are extra-budgetary. It is not the State in the broad sense that finances the scheme, but the supplier. With regard to biogas production certificates, natural gas suppliers are obliged to redeem them either by producing biogas themselves or by purchasing them from biogas producers. The situation is less clear-cut when it comes to guarantees of origin. In principle issued by energy producers, they are, failing that, auctioned off by the State (for guarantees of origin resulting from electricity generation from renewable energy or through combined heat and power, see paragraph 4 of Article L. 314-14-1 of the Energy Code and, with regard to guarantees of origin for biogas, see paragraph 2 of Article L. 446-22 of the Energy Code). Although their purchase is voluntary, suppliers have little alternative but to acquire them in order to guarantee their customers that their commercial offering is 'green'!

In both cases, it is indeed the market that the State intends to use to support sustainable energy production. It is first established amongst natural gas suppliers to enable them to fulfil their obligations to return certificates to the State and avoid penalties. The market is also favoured when it comes to guarantees of origin. A primary market is established when the State auctions off guarantees of origin; a secondary market is added to this when they are transferred by their holder (a supplier, for example) until they are used. They are then subject to cancellation : these are recorded, along with their issue and transfer, in an electronic register, see Article L. 445-4 of the Energy Code relating to guarantees of origin for renewable gas injected into the natural gas network, made applicable to guarantees of origin for biogas by the last paragraph of Article L. 446-18 of the same Code (for guarantees of origin resulting from electricity generation from renewable energy or through combined heat and power, see Article L. 314-14 of the Energy Code).

23- These 'new' instruments of public support undeniably offer advantages. The State does not resort to them out of liberal convictions but out of a desire to save public funds. They enable it to reduce the cost of energy support mechanisms and to exceed the budgetary allocation of the Multiannual Energy Programme or PPE (Senate, Information Report No. 872 drawn up on behalf of the aforementioned fact-finding mission on anaerobic digestion in the energy mix, p. 122.). The targets set for the ecological and energy transition seem even more within reach. Added to this economic appeal is a matter of local democracy – or strategy! – when the market, strictly speaking, is not functioning. These 'new' instruments do indeed make it possible to indirectly support the local authorities where energy generation facilities are located, and their groupings since Order No. 2021-236 of March 3rd, 2021 transposing various provisions of Directive (EU) 2018/2001 of December 11, 2018 on the promotion of the use of energy from renewable sources and Directive (EU) 2019/944 of June 5, 2019 on common rules for the internal market in electricity (Official Journal, March 4, 2021) [44]. With regard to guarantees of origin, these authorities may, subject to certain conditions – and in particular if they submit a request – benefit from a free transfer in their favour (paragraph 3 of Article L. 314-14 of the Energy Code (concerning guarantees of origin from electricity generated from renewable sources or by cogeneration) and paragraph 2 of Article L. 446-22 of the Energy Code (concerning guarantees of origin for biogas). This option obviously helps to make the projects more socially acceptable.

At the same time, this new form of public support inevitably raises questions. Whilst the State's desire to reduce the burden of public support on public finances is commendable, there is a significant risk that the energy supplier will pass on the purchase cost (of guarantees of origin and biogas production certificates) to the consumer to a much greater extent than the funding of traditional consumer-financed public support instruments (see, for example, the contribution towards the costs attributable to biomethane, which is used to finance the feed-in tariff applicable to biogas)! These schemes – particularly guarantees of origin – present other risks. Firstly, there is the risk of an imbalance between supply and demand for guarantees of origin auctioned by the state, with the state's involvement in their allocation being contested on principle itself (Senate, Information Report No. 872 drawn up on behalf of the aforementioned fact-finding mission on anaerobic digestion in the energy mix, p. 121). With the opening up of the European market for guarantees of origin, there is also the spectre of a 'flight'(ibid.) abroad: that a supplier might procure them from the other side of Europe without consequently supporting new renewable electricity and biogas installations in France (on the recognition of guarantees of origin for biogas from other Member States of the European Union, see Article L. 446-22-1 of the Energy Code).

Under these circumstances, and barring any major reform, let us hope that the good old public support schemes still have a bright future ahead of them!

References

1. Paul Craig (2012), European Union Administrative Law, Second edition, Oxford University Press.
2. Kim Talus (2013), EU Energy Law and Policy: A Critical Account, Oxford University Press.
3. https://www.edf-oa.fr.
4. Regulation (EU) No 1308/2013 of 17 December 2013 establishing a common organisation of the markets in agricultural products, Official Journal of the European Union, December 20, 2013.
5. https://www.edf-renouvelables.com/le-groupe-edf-et-ses-partenaires-lancent-vitisolar-un-projet-experimental-dagrivoltaisme-sur-vignes-pres-de-bordeaux).
6. Jean-Victor MAUBLANC (2021) The regulation of

sectors subject to extended producer responsibility', in M. BOUL and R. RADIGUET (eds.), Anti-Waste Law and the Circular Economy, Institut Francophone pour la Justice et la Démocratie – Louis Joinet, LGDJ 155.
7. French Senate (2021) Information Report No. 872 drawn up on behalf of the fact-finding mission on anaerobic digestion in the energy mix: challenges and impacts by Mr Daniel Salmon.
8. Michael Grubb (2014) Planetary economics: Energy, Climate Change and the Three Domains of Sustainable Development, Routledge.
9. Ministerial reply (2014) Written Question No. 37337, Official Journal of the French National Assembly, December 23: 10707.
10. Energy Regulatory Commission (CRE) (2019) 'Costs and profitability of large-scale photovoltaics in mainland France, 28 February 28.
11. Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity, Official Journal of the European Union June 14.
12. Elena Andreea Niculescu (2025) Power Purchase Agreements in the Transition to Green Energy and Climate Neutrality, Springer.
13. Directive (EU) 2023/2413 of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652, Official Journal of the European Union October 2023, 31.
14. Law No. 2023-175 of 10 March 2023 on the acceleration of renewable energy production, French, Official Journal 11 March 2023.
15. Multiannual Energy Programme (in French Programmation pluriannuelle de l'énergie or PPE 3) published by the French government on February 13, 2026 (available at https://www.economie.gouv.fr/files/files/2026/ppe3.pdf?v=1772447721.
16. Aoife Long & Jerry Murphy (2019) Can green gas certificates allow for the accurate quantification of the energy supply and sustainability of biomethane from a range of sources for renewable heat and or transport?. Renewable and Sustainable Energy Reviews 115: 109347.
17. Martha Roggenkamp (2016) Energy Law in Europe: National, EU and International Regulation, Oxford University Press.
18. Law No. 2015-992 on the Energy Transition for Green Growth of 17 August 2015, Official Journal of 18 August 2015.
19. Order No. 2016-411 on the Adaptation of the Gas System of 7 April 2016 introducing various adaptation measures in the gas sector, Official Journal of 8 April 2016.
20. Act on Energy and Climate No. 2019-1147 of 8 November 2019, Official Journal of 9 November 2019.
21. Mobility Policy Act No. 2019-1428 of 24 December 2019, Official Journal 26 December 2019.
22. Act No. 2021-1104 of 22 August 2021 on combating climate change and strengthening resilience to its effects (Climate and Resilience Act), Official Journal of 24 August 2021.
23. Law. 2023-175 relating to the acceleration of renewable energy production No of 10 March 2023 (known as APER law), Official Journal of 11 March 2023.
24. Order of 1 June 2026 amending the Order of 6 October 2021 setting the conditions for purchasing electricity produced by installations located on buildings, sheds or carports using photovoltaic solar energy, with an installed peak power of 500 kilowatts or less, Official Journal 4 June 2026 ('S21' Order).
25. Decree of 8 February 2023 amending the aforementioned Decree of 6 October 2021, Official Journal of 17 February 2023.
26. Energy Regulatory Commission (CRE) 's call for tenders concerning the construction and operation of solar power generation facilities "Building-integrated power plants, agrivoltaic greenhouses, carports, and agrivoltaic carports with a capacity exceeding 500 kWp" known as AO PPE2 PV Building of april 2026.
27. Energy Regulatory Commission (CRE) 's call for tenders relating to the construction and operation of electricity production facilities from solar energy "Building-mounted power plants, agrivoltaic greenhouses, carports and agrivoltaic carports with a capacity greater than 500 kWp" (https://www.cre.fr/documents/appels-doffres/appel-doffres-portant-sur-la-realisation-et-lexploitation-dinstallations-de-production-delectricite-a-partir-de-lenergie-solaire-centrales-sur-batiments-serres-agrivoltaiques-ombrieres-et-ombrieres-agrivoltaiques-de-puissance-superieure-a-500-kwc.html).
28. French Environment and Energy Management Agency (ADEME) (2021) 'Tremplin pour la transition écologique' scheme (see from now on https://diagdecarbonaction.bpifrance.fr/).
29. Région Nouvelle Aquitaine, 'Innovative Energy Technologies and Vectors' 2026 call, (https://les-aides.nouvelle-aquitaine.fr/transition-energetique-et-ecologique/technologies-et-vecteurs-energetiques-innovants).
30. European Court of Auditors, 'Renewable Energy and Sustainable Rural Development', Special Report No 05/2018.
31. Order of 22 March 2022 on the coverage, through the public electricity network usage tariff, of the costs of connecting renewable electricity generation installations to the public electricity networks, Official Journal of the French Republic March 2022, 26.
32. Decree No. 2018-1043 of 28 November 2018 establishing a 'Low-Carbon' label, Official Journal of 29 November 2018.
33. ADEME (2021) 'Characterising photovoltaic projects on agricultural land and agrivoltaics', special issue.
34. Energy Regulatory Commission (CRE) 's call for tenders concerning the construction and operation of innovative solar power generation installations without storage systems ('AO PPE2 PV Innovant'), which can be downloaded from https://www.cre.fr/documents/Appels-d-offres/appel-d-offres-portant-sur-la-realisation-et-l-exploitation-d-installations-de-production-d-electricite-innovantes-a-partir-de-l-energie-solaire-sa.
35. French Senate, Information Report No. 348 on the reform of the Common Organisation of the Market in Wine by Mr Gérard César, Official Journal of the Senate of 22 June 2007.
36. French Institute of Vine and Wine, 'The wine sector's commitment to carbon neutrality', 8 July 2021, available at https://www.vignevin.com/article/lengagement-de-la-filiere-vin-vers-la-neutralite-carbone.
37. Energy Regulatory Commission (CRE) 's (2026), Mise en œuvre de la systématisation de la surveillance de la cohérence des offres et panorama des offres de marché souscrites par les consommateurs résidentiels, Rapport n° 2026-06.
38. Law No. 2022-1726 of 30 December 2022 on the 2023 budget, Official Journal December 2022, 31.
39. Law No. 2019-1479 of 28 December 2019 on the 2020 Finance Act, Official Journal December 2019, 29.
40. Order of 8 September 2025 amending and then repealing the Order of 13 December 2016 setting the purchase conditions for electricity produced by installations mainly using biogas produced by methanization of non-hazardous waste and raw plant matter located in mainland France with an installed capacity strictly less than 500 kW as referred to in point 4° of Article D. 314-15 of the Energy Code and amending the

contractual terms of installations that can benefit from the obligation to purchase electricity defined by the Order of 19 May 2011 setting the purchase conditions for electricity produced by installations that utilize biogas, Official Journal 9 September 2025.

41. European Commission, Recommendation (EU) 2024/1344 on speeding up permit-granting procedures and renewable energy auctions, Official Journal of the European Union, May 2024, 21.
42. Law No. 83-597 of July 7, 1983 relating to local mixed-economy companies, Official Journal of July 8, 1983.
43. Emilie Hersant (2010) Les collectivités territoriales et le secteur énergétique, thesis, University of Orléans.
44. Order No. 2021-236 of 3 March 2021 transposing various provisions of Directive (EU) 2018/2001 of 11 December 2018 on the promotion of the use of energy from renewable sources and Directive (EU) 2019/944 of 5 June 2019 on common rules for the internal market in electricity, Official Journal, March 4, 2021.