
FLOATING PV ON IRRIGATION BASINS IN ITALY: TOWARDS AN EU FRAMEWORK

PART I – LEGAL QUALIFICATION, AGRICULTURAL CONNECTION AND PROPRIETARY FRAMEWORK

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KEYWORDS

Floating photovoltaic (FPV), Italian agrarian law, irrigation reservoirs, connected agricultural activity, Article 2135 Italian Civil Code, water concessions; agricultural leases, rights of superficies, multifunctional agriculture

ABSTRACT

This first part examines floating photovoltaic (FPV) installations on agricultural irrigation reservoirs from the standpoint of Italian agrarian, civil, and water law. Its central aim is to determine whether, and under what conditions, FPV may remain legally embedded in the agricultural organisation of the holding rather than constituting an autonomous energy use of the water body. The analysis first focuses on the legal classification of the reservoir, distinguishing between the public status of water as a resource and the private or concession-based availability of the basin and its appurtenances. It then considers whether energy generation on irrigation reservoirs may be treated as a connected agricultural activity within the meaning of Article 2135 of the Italian Civil Code, provided that the irrigation function of the basin remains prevailing and the energy use is functionally proportionate to the needs of the farming enterprise. Particular attention is devoted to the proprietary and contractual structures through which this balance is legally organised, including rights of superficies, concession-based titles, hydraulic servitudes and agreements

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involving owners, tenants and third-party operators. On that basis, the article argues that FPV on irrigation basins may be admitted within the agrarian sphere only where the project preserves the agricultural destination of the reservoir, remains subordinate to the productive cycle of the holding and is supported by a coherent legal framework combining water-law compatibility, private-law availability and reversibility of the installation.

I. INTRODUCTION

In recent years, floating photovoltaic (FPV) systems have attracted increasing attention not only as an innovative renewable energy technology but also as a legally complex form of energy deployment capable of testing the boundaries between agrarian law, water law, and energy regulation. By placing photovoltaic modules on artificial or heavily modified water bodies, FPV appears to reduce pressure on agricultural land; yet, rather than eliminating legal conflict, it shifts that conflict from the soil to the water surface and from land-use transformation to the governance of agricultural infrastructures functionally linked to water use.

The issue is particularly acute where the relevant water bodies are irrigation reservoirs, on-farm basins, or similar hydraulic works that serve the productive cycle of the agricultural holding. In these contexts, the same infrastructure may simultaneously perform irrigation, storage and environmental functions, while also being used for electricity generation. The legal question is therefore not simply whether floating solar should be encouraged as a matter of renewable-energy policy, but whether, and under what conditions, the energy use of such reservoirs can remain compatible with their primary agricultural destination.

From this perspective, the central problem is one of legal qualification before it becomes one of administrative permitting. The decisive issue is whether FPV on irrigation basins may be regarded as a form of multiple use of water that remains internal to the farming enterprise, or whether it should instead be treated as an autonomous industrial exploitation of the water surface. The answer depends on a cumulative assessment involving the legal status of the reservoir, the relationship between public control of the water resource and private availability of the basin, the requirements for classifying energy production as a connected agricultural activity, and the proprietary or contractual titles through which the project is structured.

This first part addresses that question within the Italian legal system. It begins by examining the legal classification of the water body and the dual public-private structure characteristic of agricultural reservoirs. It then analyses the relationship between FPV and agricultural activity, with particular regard to Article 2135 of the Italian Civil Code, the principle of multifunctionality, and the

requirement that the basin's irrigation function remain predominant. Finally, it turns to the legal and contractual techniques by which such projects may be organised, including rights of superficies, concessions, servitudes, and agreements involving owners, tenants, and third-party operators.

The working hypothesis developed in this part is that FPV may remain within the agrarian sphere only where four conditions are jointly satisfied: the persistence of the reservoir's irrigation function; the legal compatibility of the energy project with the public title governing water use; the functional integration of electricity generation into the productive organisation of the holding; and the reversibility of the installation from both a proprietary and an agrarian standpoint. Under this approach, floating photovoltaics become a test case for the capacity of contemporary agrarian law to accommodate new forms of energy production without losing its organising connection to productive continuity, environmental balance and the orderly use of natural resources.

II. LEGAL CLASSIFICATION OF THE WATER BODY

Before turning to the public-law regime governing water resources, a prior question must be clarified, since it lies at the very foundation of the legal treatment of floating photovoltaic systems in agriculture: can the irrigation reservoir on which the plant is to be installed be regarded, in juridical terms, as part of the agricultural holding (*fondo rustico*)?

The answer is not self-evident. It represents the first decisive threshold in determining whether FPV on irrigation basins should be analysed as an internal development of the farming enterprise or, conversely, as an external occupation of a water body governed primarily by public-law rules.

Where the reservoir is a structure constructed on private land and stably intended to serve the farming enterprise, it may be characterised as an infrastructure instrumental to the business and thus as a pertinence of the land within the meaning of Art. 817 Civil Code. In this scenario, the reservoir – although filled with public water – forms part of the “farm resources normally employed” within the meaning of Art. 2135 Civil Code, and any energy use is superimposed on an asset that is functionally agricultural, thereby strengthening the classification of the activity as *connected*.

The situation is different – and in practice very common – in the case of diversion basins or consortia reservoirs, where the farmer's relationship with the water body is mediated by a concession or by some form of temporary entitlement to use. In such cases, the public-law nature of the asset prevails over private-law elements, and the installation of FPV amounts to an occupation of public water domain, requiring a coordinated assessment of both the concession framework

and the agrarian framework. This has significant implications at the permitting level (single authorisation procedure, conference of services, hydraulic clearance and environmental compatibility), as well as for tax treatment and for the civil-law classification of the activity.¹

The distinction between these two situations shows that, for the purposes of Art. 2135 Civil Code, the decisive element does not lie merely in the inclusion of the reservoir within the owner's title to the land. What matters, rather, is whether the hydraulic structure is both legally and functionally available to the farmer as one of the business resources "normally employed" in agricultural activity², and whether the public title governing the use of water is itself compatible with an additional energy function.

Only within this dual legal framework – that is, where private availability of the reservoir structure converges with a public title permitting the multiple use of the water resource – may an FPV plant be classified as a connected agricultural activity without altering the original agronomic, hydraulic and environmental function of the basin. In this sense, the legal status of the reservoir cannot be reduced either to private property or to public concession alone; it must be understood through the interaction of both³.

A) Public ownership of water and its agricultural function

Under Italian law, Article 822(1) of the Civil Code includes among State-owned property "rivers, streams, lakes and other waters classified as public by the relevant legislation"⁴. Legislative Decree No. 152 of 3 April 2006 (Arts 144 et seq.), in continuity with Presidential Decree No. 238 of 18 February 1999⁵, further provides that all surface and groundwater – even when stored in reservoirs or tanks – are to be regarded as public resources, to be safeguarded and used

¹ Corte costituzionale, 24 April 2015, n 66, *Giurisprudenza costituzionale* 2015, 1492 ff (It) (ruling out the automatic assimilation of ground-mounted photovoltaic plants to agricultural activities and reiterating the need to preserve the productive and landscape function of rural land)

² M. Targhini, 'La travisata ratio del fotovoltaico in agricoltura' (2020) 6 *Diritto e Pratica Tributaria* 2731 ff (underlining that the connection required by art 2135 of the Italian Civil Code presupposes a functional link between agricultural and energy activities, and not the mere location of the plant on rural land)

³ M. Bagnoli and Alberto Rocchi, 'La prevalenza nel fotovoltaico agricolo: problemi applicativi' *Corriere Tributario* (7 December 2015) 46, 4551 (emphasising that the connection requirement calls for a substantive assessment of the proportion between means, resources and purposes, and cannot be reduced to purely quantitative parameters)

⁴ Giorgio Berti, 'Problemi attuali della disciplina del demanio idrico' (2001) *Jus* 259

⁵ Presidential Decree No 238 of 18 February 1999, implementing Law No 36 of 5 January 1994 (the 'Galli Law')

according to criteria of solidarity⁶. As a matter of principle, therefore, the use of water is subject to a public title granted by the competent authority. In the context of FPV, however, that general rule must be applied in light of the concrete morphology and legal configuration of the water body concerned, because the physical structure of the reservoir determines the extent to which public ownership of water coexists with private control over the land and hydraulic works, and thus shapes the relevant bundle of rights, powers and procedures.

Where FPV is installed on a natural watercourse or natural lake, public ownership is “full”: not only the water as such, but also the riverbed and the banks are subject to the regime governing public domain property. In these cases, mooring systems, walkways, or cable ducts constitute an occupation of public property and, in addition to the water-use concession, require the specific permits and clearances set out in hydraulic police regulations⁷ and environmental law.

A different, and very common, situation in agriculture is that of artificial reservoirs built on private land (on-farm ponds, irrigation storage basins, disused quarries that have been re-naturalized). In such cases, a distinction must be drawn between the public status of the water resource and the private status of the artificial structure that contains and organises it. The water stored in the reservoir remains public and its abstraction and accumulation continue to be subject to a concession, whereas the reservoir works (embankments, lining, intake and discharge structures) generally fall within the landowner’s private domain. It is precisely along this dividing line that FPV reveals its “hybrid” nature: the technology does not consume soil, but uses the water surface as a technical platform, combining a public concession over water with private control of the basin and its appurtenances.

In practice, the permitting process follows two distinct but coordinated tracks. The first is hydro-environmental: it assesses the lawfulness of multiple uses (irrigation and energy), the compatibility of the project with the water balance and the ecological status of the water body, and, where necessary, gathers the opinions required for environmental impact assessment, landscape protection, and hydraulic safety. The second is private-law-oriented: it concerns the availability of the reservoir structure and the surrounding banks for anchoring, mooring, and access, as well as the configuration of the relationship between landowner and tenant farmer, especially where the basin is included in an

⁶ *Italian Constitutional Court, 10 July 1996, No. 259, Giurisprudenza costituzionale 1996, 2319 ff, holding unfounded the constitutional challenge to Article 1(1) of Law No. 36 of 5 January 1994, which declared all surface and groundwater public and characterised water as a resource to be safeguarded and used according to criteria of solidarity.*

⁷ See Royal Decree No. 523 of 25 July 1904, *Testo unico delle disposizioni di legge intorno alle opere idrauliche delle diverse categorie* (It.) (laying down the fundamental rules on hydraulic police and concessions over public water property and governing the use, occupation, and abstraction of water from public watercourses, arts. 93 et seq.).

agricultural lease. Administrative competence over hydraulic works and water-use concessions lies primarily with the Regions and delegated entities, including land reclamation consortia⁸, which are likewise entrusted with functions of maintenance, supervision and control over public water bodies.

From a systemic perspective, it is important to emphasise that the water concession does not exhaust the conditions of lawfulness for an FPV plant, just as private ownership of the reservoir does not permit disregarding public protection of the water resource. The two titles – the public concession over water and the private availability of the reservoir – are both necessary and concurrent⁹: the former safeguards the public interest in the sustainable management of the water resource, while the latter governs, in compliance with that interest, the physical use of the basin and its appurtenances. Accordingly, the legal admissibility of FPV on agricultural reservoirs depends on the convergence of these two dimensions: neither the public title alone nor the private title alone is sufficient. Only within this dual framework may the energy use of the water surface be regarded as compatible with the agricultural function of the reservoir and with the principles of sustainability, proportionality and reversibility that govern the system as a whole.

B) Agricultural use of water and its interaction with energy production

In agricultural law, water is an essential production factor: it forms part of the rural holding and is a key resource for farm operations. Its use for irrigation, livestock watering, and agro-food processing has traditionally been regarded as a primary productive use, closely linked to soil function and the protection of fertility.

The deployment of floating photovoltaic (FPV) systems – which allow solar modules to be installed on artificial water bodies, irrigation reservoirs or flooded quarry lakes – brings this traditional legal framework under strain and raises a central question: to what extent may agricultural water resources also be used for energy purposes without undermining their agrarian destination and primary productive function?

The answer cannot be separated from the public law regime governing water. As recalled above, Italian law is now based on the general rule of public ownership

⁸ Legislative Decree No. 112 of 31 March 1998, *Conferimento di funzioni e compiti amministrativi dello Stato alle Regioni ed agli enti locali, in attuazione del capo I della legge 15 marzo 1997, n. 59* (It.) (transferring to the Regions the powers relating to hydraulic works and to the management, maintenance, and policing of water, arts. 86–89, while retaining ownership of public water property in the State).

⁹ This reflects the so-called principle of coexistence.

of surface and groundwater and on the concessionary nature of all uses¹⁰. The right to use a reservoir or basin, even when located on private land, is therefore derivative in nature and functionally linked to the specific use authorised (e.g. irrigation or livestock watering). Any additional use – such as the installation of an FPV plant – may therefore alter the functional perimeter of the authorised use and must be implemented through a variation or an additional permit, subject to a separate assessment of compatibility with the original agricultural use.

Energy use of water, in its classic hydroelectric form, has long been governed by a detailed system of concessions and fees. The novelty of FPV lies in its hybrid character: it does not physically abstract water but uses the surface as a platform and environment for the plant, thereby affecting the reservoir's regime of use. In systemic terms, agricultural water remains both a production resource and an environmental good, whose management must strike a balance between economic functionality and ecological protection.

The installation of floating modules can influence this balance in different ways: on the one hand, it may reduce evaporation, potentially benefiting water conservation; on the other hand, it can alter oxygenation and temperature, with possible repercussions for aquatic ecosystems and the quality of irrigation water. For these reasons, multiple use of water for agricultural and energy purposes cannot be left to the unfettered discretion of the landowner or of the concession holder. It must be expressly authorised, in accordance with the principle that management of water resources is governed by the prevalence of the public interest¹¹.

At the EU level, the interaction between water and energy is a systemic issue in environmental and climate policies. Renewable energy deployment must be coordinated with the protection of water bodies and with the objectives of Directive 2000/60/EC (Water Framework Directive)¹², which requires Member

¹⁰ F. Guella, 'Demanio e risorsa idrica: la proprietà e la gestione dell'acqua nel quadro giuridico nazionale' in L. Antonioli, D. Florenzano, F. Guella and G. Postal (eds), *Beni a titolarità collettiva e sfruttamento della risorsa idrica. Il caso della Magnifica Comunità di Fiemme* ('Quaderni della Facoltà di Giurisprudenza di Trento' No 82, 2024) 21 ff

¹¹ The principle of the primacy of the public interest in the management of water resources is grounded in Art. 144 of Legislative Decree No. 152 of 3 April 2006, which describes water as a "resource to be safeguarded and used according to criteria of solidarity," thereby recognising its public and environmental function. This approach, which derives from Directive 2000/60/EC, reflects a conception of water as a common good, to be directed primarily towards satisfying the essential needs of the community rather than individual economic interests. Constitutional case-law has confirmed the legitimacy of this approach, holding that the public-law regulation of water constitutes an expression of the social function of property and of the intergenerational protection of the environment (Italian Constitutional Court, 10 July 1996, No. 259, *Giurisprudenza costituzionale* 1996, 2319 ff.).

¹² Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (the 'Water Framework Directive') [2000] OJ L 327/1. The Directive introduces the principle of 'good

States to achieve and maintain the “good ecological status” of waters¹³ and to comply with the principle of “non-deterioration” (Art. 4)¹⁴. Read in conjunction with the precautionary principle, this framework implies that any energy project in aquatic environments – even if reversible and time-limited – must be assessed for its cumulative impacts on the aquatic ecosystem and on the resource’s agricultural uses.

At the national level, the Environmental Code (Arts 144 et seq. of Legislative Decree No. 152/2006) classifies all surface and groundwater as public goods and subjects any use to a concession. FPV systems installed on reservoirs intended for irrigation therefore fall within a zone of regulatory interference: the renewable-energy permitting regime, now reorganised by Legislative Decree No. 190 of 25 November 2024, cannot disregard either the original irrigation purpose or the integrity of the underlying water-use title. In this perspective, energy use may be admitted only as a complementary or multiple use of the resource, provided that it does not reduce the availability of water for agriculture or impair water quality.¹⁵

Another important aspect concerns the allocation of rights and the management of economic benefits derived from the energy use of the basin. Coexistence between collective uses of water and its economic exploitation (hydroelectric or photovoltaic) is acceptable only if the proceeds are channelled, at least in part, into environmental protection or into the maintenance of the common asset. The energy function must remain ancillary to the irrigation function, with clearly defined mechanisms of compensation or indemnification

status’ for surface water and groundwater, the prohibition of deterioration, river-basin-level planning through river basin management plans and programmes of measures (arts 4, 11 and 13), public participation (art 14) and a harmonised monitoring system (Annex V). In Italy, it has been implemented primarily by Legislative Decree No 152 of 3 April 2006 (Part III), as subsequently amended, including for the purpose of transposing Directives 2008/105/EC and 2013/39/EU on environmental quality standards

¹³ A. Porcari, ‘Il nesso acqua-energia e i suoi trade-off nel quadro normativo europeo’ in L. Antonioli, D. Florenzano, F. Guella and G. Postal (eds), *Beni a titolarità collettiva e sfruttamento della risorsa idrica. Il caso della Magnifica Comunità di Fiemme* (‘Quaderni della Facoltà di Giurisprudenza di Trento’ No 82/2024) 71 ff.

¹⁴ Art 4(1) of Directive 2000/60/EC (the ‘Water Framework Directive’) enshrines the non-deterioration principle and the obligation to achieve and maintain the ‘good status’ of water bodies. Accordingly, every project, including reversible ones, must be assessed in terms of its impacts on temperature, oxygenation, nutrients and biota. The Court of Justice of the European Union has recognised the directly binding effect of this principle on national authorities, which must refuse or subject to appropriate conditions any project liable to worsen the chemical or ecological status of waters (Case C-461/13 *Bund für Umwelt und Naturschutz Deutschland eV v Bundesrepublik Deutschland* (Weser) (CJEU, 1 July 2015))

¹⁵ This approach is also reflected in the practice of land reclamation consortia and in regional studies. Parco del Mincio, *Volume Irrigazione* (updated 21 December 2023) https://www.parcodelmincio.it/pdf/VolumeIrrigazione_aggiornato21dicembre.pdf accessed 9 January 2026 (noting that any non-agricultural use of an irrigation reservoir must be subject to prior technical and environmental assessment)

and with restoration clauses set out at the level of both the concession and the relevant private contracts.

Recent EU and national policies on renewable energy – as reflected, inter alia, in the updated National Energy and Climate Plan 2030, transmitted to the European Commission in July 2024, and in the renewable-energy permitting framework reorganised by Legislative Decree No. 190/2024 – stress the need to avoid unnecessary competition for natural resources and to favour installations capable of limiting additional pressure on productive agricultural land. Applied to agricultural reservoirs, this policy orientation confirms that FPV must comply with a principle of non-interference with the primary uses of the water resource.

The point of equilibrium is a model of water management that remains publicly owned but may be open to innovative forms of economic valorisation, provided they are sustainable and reversible. Accordingly, the energy use of agricultural water bodies – of which FPV is the most recent expression – cannot be treated as an autonomous mode of exploitation, but only as an accessory, conditional and temporary function that remains subordinate to agricultural use. Any reversal of this hierarchy, whereby energy generation displaces or reduces irrigation capacity, would transform the water resource from productive infrastructure into a mere support for energy rent, thereby distorting the social, environmental and agrarian function that the legal system assigns to water.

C) The principle of functional destination and farm multifunctionality

Under Italian law, energy production from renewable sources qualifies as a “connected” agricultural activity only where two cumulative requirements are met: it must be instrumental to the farming enterprise, and it must prevalently use farm resources “normally employed” in agricultural activities (Art. 2135 Civil Code, as amended by Legislative Decree No. 228/2001). This criterion is decisive in the case of FPV, because the absence of direct land occupation does not, in itself, resolve the question whether electricity generation remains internal to the agricultural enterprise or instead acquires an autonomous industrial significance. In practical terms, this means that the energy plant – including FPV systems on irrigation reservoirs – must rely on the landholding’s means and infrastructures (including the water surface, related hydraulic and service works, basins and ponds, rural buildings, internal roads and grid connection points) without impairing their primary function of agricultural production and irrigation services. It also requires that the electricity generated be primarily directed to the needs of the farm itself – such as self-consumption for irrigation, cooling or processing – while feed-in to the grid remains functionally secondary.

The assessment is essentially substantive and is carried out on the basis of combined physical, functional and economic indicators: the percentage of water

surface covered and the layout of the plant in relation to the reservoir; the relationship between energy output and the farm's energy requirements, reflected in a documented water and energy balance; and the incidence of energy revenues on the value of agricultural production. Where these indicators show an overall balance, energy production may be regarded as a connected agricultural activity. Where, by contrast, the predominant purpose becomes the sale of electricity or where the plant significantly interferes with the irrigation function (for example, by reducing useful storage capacity or hindering intake and discharge works), the activity falls outside the agricultural sphere and into that of an industrial enterprise, with the attendant tax and planning consequences.

Accordingly, the legal test cannot be satisfied by a merely negative argument, namely that FPV does not consume agricultural soil. The qualification of the activity as agricultural requires positive proof of instrumentality and functional prevalence within the meaning of Art. 2135 Civil Code. In the case of floating installations, that proof must be established through technical and accounting elements demonstrating that the energy function remains embedded in the farm's productive organisation and does not displace the reservoir's primary irrigation role.

D) Towards a legal classification of “agricultural” energy use of water

The growing spread of floating photovoltaic plants in rural areas makes it increasingly necessary to elaborate a specific legal classification of the energy use of water in agriculture. The decisive distinction is not, in itself, between agricultural and non-agricultural water bodies, but between primary agricultural use – such as irrigation, livestock watering and, where relevant, aquaculture – and a superimposed energy use that may remain legally compatible with that primary function only where it takes the form of a connected activity of the farming enterprise. This occurs where FPV systems are installed on on-farm irrigation reservoirs, are genuinely instrumental to the production cycle and do not compromise the core hydraulic and productive functions of the infrastructure.

From this perspective, the qualification of energy production as a connected agricultural activity cannot depend on abstract labels but must be tied to a set of verifiable legal and technical conditions that can be tested within the permitting process itself. Those conditions include, at a minimum, the absence of deterioration of the water balance, and preferably an improvement in water efficiency; the prevalence of self-consumption over commercial export; the absence of interference with intake and discharge works and with the ordinary hydraulic management of the basin; and the reversibility of the installation, supported by adequate decommissioning guarantees. Only where these cumulative conditions

are met can the energy use of the reservoir be regarded as remaining internal to the multifunctional logic of the farm.

By contrast, autonomous energy use characterises plants developed and operated by industrial players on public water bodies or under stand-alone concessions, where electricity generation is the main activity rather than an auxiliary service for the farm.

The absence of such a distinction fuels legal uncertainty, with potentially distortive effects on concession and contractual relationships and, above all, on access to incentives and tax benefits reserved for the primary sector. The real challenge for the legislature is therefore to recognise that the energy use of water may constitute a new expression of agricultural multifunctionality, while at the same time subjecting that recognition to strict and controllable criteria of hydrological, environmental and functional compatibility. What is needed is not an indiscriminate opening of agricultural water bodies to energy exploitation, but a legal framework capable of distinguishing accessory agro-energy use from autonomous industrial use.

From a *de iure condendo* perspective, such a framework should rest on four coordinated elements. First, it should provide an express legal recognition of the agro-energetic multiple use of irrigation reservoirs as a distinct form of lawful use, where the agricultural destination of the basin remains prevailing. Secondly, it should require an integrated title capable of coordinating the water concession and the energy authorisation, including monitoring duties, restoration obligations and compatibility conditions. Thirdly, where the reservoir is situated on leased agricultural land, the tenant's consent should be treated not as a marginal contractual matter, but as a substantive precondition for the lawfulness of the project. Finally, national guidance should define coverage thresholds and operating conditions by reference to eco-hydrological indicators, so as to avoid both over-regulation in abstracto and excessive case-by-case uncertainty.

A framework constructed along these lines would not merely facilitate investment. More importantly, it would provide legal certainty while preserving the public interest in the sustainable management of water resources and the agricultural function of rural land. In this sense, the legal classification of FPV on irrigation reservoirs becomes a paradigmatic test of whether agrarian law is capable of absorbing new forms of energy production without relinquishing its core commitment to productive continuity, environmental balance and the ordered use of natural resources.

III. RELATIONSHIP WITH AGRICULTURAL ACTIVITY

Once the legal status of the reservoir and the conditions governing the multiple use of water have been clarified, the analysis must turn to a distinct but closely related issue: whether, and under what conditions, FPV may remain legally embedded in agricultural activity itself.

In the case of ground-mounted agrivoltaic plants, the compatibility inquiry focuses primarily on the relationship between electricity generation and soil use for agriculture. In the case of FPV, by contrast, the relevant interface is not the soil but the water infrastructure serving the farm. The question is therefore not merely one of physical coexistence, but of functional integration within the agricultural organisation of the holding.

For this reason, the compatibility test cannot be limited to the occupation of the water surface, but must extend to the preservation of the water balance and of the operational integrity of intake and discharge works. Only where these conditions are satisfied can the energy use of the reservoir be assessed as compatible with the agricultural activity.

A) Classification as an agricultural activity under Article 2135 Civil Code

Article 2135 of the Italian Civil Code extends the notion of agricultural activity beyond cultivation, forestry and livestock farming to include connected activities consisting in the provision of goods or services through the prevalent use of resources or equipment normally employed in the farming enterprise. Within this framework, energy production from renewable sources may be classified as a connected agricultural activity only where it remains functionally integrated into the productive organisation of the holding and does not acquire an autonomous industrial significance.

Administrative case-law on agrivoltaic plants confirms, albeit with reference to ground-based installations, that the compatibility between photovoltaic generation and agricultural activity depends on a substantive test of functional integration and non-prevalence of the energy use, which must remain subordinate to productive farming and must not become an exclusive or prevailing activity¹⁶. Applied by analogy to FPV, the same criterion requires verification not only of the coexistence between electricity generation and the agricultural organisation of the holding, but also of the preservation of the reservoir's hydraulic and irrigation function.

¹⁶ ;TAR Puglia, Lecce, Sez. II, 26 May 2025, n. 1083; TAR Calabria Catanzaro, 30 September 2025, n. 1537 on the requirements for the installation of an agrivoltaic plant and on the limits of local administrative restrictions not provided for by national legislation.

This translates into a set of verifiable conditions: sizing consistent with farm needs and prevalence of self-consumption; no reduction in irrigation capacity or obstacles to access and maintenance of hydraulic works; reversibility of the plant and a credible decommissioning plan. Given the specific interaction with water resources, this requires a site-specific eco-hydrological assessment and imposes a heightened burden of proof on the farmer, who must document the energy and water balance and implement an appropriate monitoring plan to demonstrate the “connection” required by Article 2135 of the Civil Code.

B) Multifunctionality and consistency with the Common Agricultural Policy

The principle of multifunctionality of the agricultural holding, recognised both in national and EU law, provides the broader systemic framework within which the compatibility between FPV and agricultural activity must be assessed. Article 1 of Legislative Decree No. 228/2001 and Article 5 of Regulation (EU) 2021/2115¹⁷ on the new CAP acknowledge that agricultural activity contributes not only to food production, but also to the sustainable management of natural resources, environmental protection and the generation of energy from renewable sources.

Read in this light, the use of irrigation reservoirs or on-farm basins for FPV deployment may fall within an eco-energy function of the farm, but only where such use remains demonstrably subordinate to the agricultural organisation of the holding. This requires objective evidence that the installation contributes to the farm’s operation through reduced water losses and improved energy self-sufficiency, as shown by a documented water and energy balance, the prevalence of self-consumption and the monitoring of hydro-ecological parameters¹⁸. The

¹⁷ Art 5 of Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for CAP Strategic Plans (the ‘Strategic Plan Regulation’) sets out the specific objectives of the Common Agricultural Policy for the period 2023–2027. Of particular relevance is point (f), which aims to ‘contribute to climate change mitigation and adaptation, including by reducing greenhouse gas emissions and enhancing carbon sequestration, and promote sustainable energy’. This provision constitutes the legal basis for the integration of renewable energy sources into the agricultural production model, thereby legitimising the energy-related multifunctionality of the farm enterprise, provided that it remains consistent with environmental sustainability and the protection of natural resources

¹⁸ In this perspective, the assessment of compatibility between energy use and agricultural use of water should be supported by traceable evidentiary tools that are interoperable with the CAP control ecosystem (IACS and the Agricultural Monitoring System). Farm documentation – such as field diaries, plant downtime logs, geo-referenced maps of the areas concerned and registers of water and energy consumption – can serve as an operational evidentiary bridge, suitable for demonstrating, at the permitting stage, both the non-interference of the floating photovoltaic plant with the irrigation function and the prevalence of agricultural use. This

decisive condition, however, remains that energy production must not prevail over the agricultural function or impair the overall productive capacity of the holding.

Multifunctionality, in other words, does not justify an indeterminate expansion of the farm into the energy sector. It allows ancillary activities only insofar as they remain integrated into, and functionally linked with, the economic cycle of the agricultural enterprise. It follows that the installation of a floating photovoltaic plant on a farm irrigation reservoir can fall within the scope of agricultural activity only where its instrumentality to primary production and its predominant orientation towards the farm's own energy needs are concretely demonstrated. Conversely, agricultural qualification must be denied where the plant is structurally designed for the production and sale of electricity as a principal or autonomous activity.

C) The principle of prevalence of agricultural activity and “functional proportion”

The dividing line between a connected agricultural activity and an activity external to agriculture must be drawn in the light of Article 2135 Civil Code, which extends the notion of agricultural activity to include “the supply of goods or services through the prevalent use of equipment or resources of the holding normally employed in the agricultural activity carried out”. Within this framework, prevalence and instrumentality do not operate as abstract formulas, but as substantive criteria for determining whether an ancillary activity remains internal to the agricultural enterprise or must instead be reclassified as industrial or commercial¹⁹. The sale of surplus electricity is not, as such, incompatible with agricultural qualification, if it remains functionally residual with respect to self-consumption and that energy revenues do not become predominant in the farm's overall economic profile. The burden of proving such instrumentality lies with the farmer.

Case-law of the Court of Cassation has consolidated this approach, holding that the notion of a connected activity requires a substantive assessment of the prevalence of agriculture over the additional activity, to be carried out on the

methodology, already tested in pilot projects on advanced agrivoltaics, makes it possible to integrate the technical-environmental assessment with the management traceability required by the systems of enhanced conditionality and continuous monitoring under the 2023–2027 CAP, thereby strengthening proof of compliance with the DNSH principle and with the model of sustainable multifunctionality of the farm enterprise.

¹⁹ This logic is also reflected in the tax rules laid down in art 32 of Presidential Decree No 917 of 22 December 1986 (TUIR), as well as in the ministerial decrees listing the processing and transformation activities that may be classified as agricultural (Ministerial Decree of 13 February 2015, published in *Gazzetta Ufficiale* No 72 of 27 March 2015)

basis of economic and functional criteria and entrusted to the trial judge²⁰. Accordingly, multifunctionality of the agricultural enterprise must not degenerate into an undifferentiated expansion of ancillary activities, but must preserve a balanced relationship between the productive core of the holding and the additional activity, measured by reference to the resources employed and the purposes actually pursued²¹.

For floating photovoltaic systems, this requirement may be reformulated in terms of “functional proportion”. The point is not merely whether the plant can coexist physically with the reservoir, but whether the scale, function and economic role of the installation remain proportionate to the agricultural organisation of the holding. This proportionality may be assessed along three interrelated dimensions. The first is physical, and concerns the ratio between the water surface occupied by the modules and the overall size and hydraulic configuration of the reservoir, so that its primary irrigation function is not compromised. The second is functional in the strict sense, and concerns the relationship between energy output and the farm’s actual energy requirements, so that production remains instrumental to self-consumption or to the efficiency of the agricultural cycle. The third is economic and concerns the relationship between the value of agricultural production and the revenues derived from the sale of electricity.

In the absence of a statutory national threshold for the coverage of water surfaces, any percentage values circulating in practice (e.g., 30–50%) are purely technical or precautionary in nature and do not derive from binding State-level sources. For that reason, no abstract coverage rate can by itself determine the agricultural or non-agricultural character of an FPV plant. The concrete limit must be determined on a case-by-case basis by the competent authority, also in the light of opinions issued by environmental agencies, land reclamation consortia and hydraulic authorities. It follows that a plant which saturates the usable surface of the reservoir or is designed exclusively for feed-in to the grid cannot be regarded as a connected agricultural activity, but constitutes an industrial activity, with the corresponding planning, tax and permitting consequences. Conversely, only where an overall balance is preserved between the means employed, the farm resources mobilised and the agricultural ends pursued can FPV systems remain within the perimeter of the multifunctional agricultural enterprise under Article 2135 Civil Code.

²⁰ Corte di cassazione, 22 March 2022, n 9353, *Rivista di diritto agrario* 2022, 511 ff

²¹ L. Costato, ‘L’attività agricola tra tradizione e innovazione: il problema delle attività connesse’ *Rivista di diritto agrario* (2003) 5 ff

D) The contractual dimension and the relationship between owner and tenant

The contractual perspective plays a central role in the regulation of floating photovoltaic systems, since installing a plant on an irrigation reservoir or farm basin on leased land may significantly affect the synallagmatic balance of the agricultural lease. Within the framework outlined above, an FPV plant is situated in a “hybrid” legal space: water is a public asset subject to concession, whereas the reservoir structure and banks fall within the private sphere. It follows that the private-law relationship between landlord and tenant cannot be treated as a merely internal matter of contract, but must be coordinated with the public-law conditions governing the lawful use of the reservoir for energy purposes.

Italian legislation on the lease of agricultural land, laid down in Law No. 203 of 3 May 1982, is built on the principle of stability of the contractual relationship and on the protection of the tenant’s interest in preserving the productive efficiency of the holding. In this respect, the general rule on the lease of productive assets, together with the specific regime governing improvements, additions and transformations in agricultural leases, imposes a clear constraint: interventions affecting the land and its functional appurtenances – including reservoirs and hydraulic works – may not alter the agricultural destination of the holding or impair its productive functionality unless they are agreed or authorised under the applicable rules²².

From a civil-law standpoint, the construction of an FPV plant on an irrigation reservoir may constitute an improvement, addition or transformation affecting the functional organisation of the holding within the meaning of Articles 16 and 17 of Law No. 203/1982. Although it does not directly affect the soil, such an installation changes how water resources are used and may interfere with withdrawals, discharges, access, and maintenance. According to case-law, any intervention that modifies the destination or structure of the holding without specific prior consent of the parties amounts to a breach of contract: the construction of works or plants that are extraneous to ordinary farming practice requires an explicit and detailed agreement, and the landlord cannot unilaterally dispose of the reservoir included in the leased land without infringing the tenant’s right to peaceful enjoyment. For that reason, the tenant’s consent must be regarded

²² Article 1615 of the Italian Civil Code provides that, where the lease concerns the enjoyment of a productive thing, the lessee must manage it in accordance with the economic destination of the thing and with the interest of production. In agricultural leases, Article 16 of Law No. 203 of 3 May 1982 allows either party to carry out land improvements, additions and transformations of productive arrangements and rural buildings, provided that they do not alter the agricultural destination of the holding and comply with regional development programmes or, failing these, with the cultivation vocation of the area. Article 17 of the same Law governs the indemnity due for authorised improvements.

not as a marginal contractual formality, but as a substantive condition of legal compatibility between the project and the existing agricultural use of the holding²³.

Where the owner installs, or grants to a third-party operator the right to install, a floating photovoltaic plant in the absence of such consent, the tenant may rely on the remedies provided by Article 5 of Law No. 203/1982²⁴, requesting a reduction of the rent proportionate to the loss of enjoyment of the holding, or termination of the contract where the transformation significantly affects the agricultural destination or the economic equilibrium of the lease, in addition to claiming damages for loss of production or for restrictions on irrigational use of water²⁵.

If a real right (e.g. a right of superficies²⁶) or a contractual right of use over the reservoir is to be granted to the operator, the tenant's consent must be given in writing, with specific reference to the works envisaged and, where the enjoyment of the holding is durably affected, accompanied by an adjustment of the contractual relationship (indemnity, rent reduction, recalibration of obligations). Failing such agreement, the only lawful solution is the tenant's removal from the affected area against payment of an appropriate indemnity commensurate with the prejudice suffered.

The solution most consistent with the principle of stability of agricultural leases is, in any event, a prior, written and technically detailed agreement²⁷ capable of defining ex ante the civil-law and administrative coordinates of the FPV project. Such an agreement should govern the duration and scope of the authorisation to construct and operate the plant, the distribution of economic benefits between owner and tenant, the allocation of maintenance obligations

²³ Corte di cassazione, 24 October 2007, n 22325, *Giurisprudenza italiana* 2008, 545

²⁴ The provision recognises that, where the tenant's enjoyment of the holding is reduced as a result of circumstances attributable to the landlord, the tenant is entitled to a proportional reduction of the rent or, if the reduction is such as to frustrate the very utility which the contract is intended to provide, to termination of the relationship, without prejudice to any claim for damages. The legislature thus seeks to ensure the economic stability of the agricultural enterprise, guaranteeing the tenant the maintenance of a fair balance between enjoyment of the land and the consideration payable.

²⁵ Agrarian case law has recognised the legitimacy of these remedies even in the presence of building works or infrastructural interventions carried out on the leased land without agreement, a principle that – by identity of ratio – can be extended to the installation of energy plants. See Tribunale di Mantova, 8 February 2016, *Rivista di diritto agrario* 2016, 289. From a systemic standpoint, such unilateral intervention amounts to a breach of the landlord's obligation to ensure the tenant's peaceful enjoyment under art 1585 Civil Code and conflicts with the prohibition, stemming from art 1628 Civil Code and art 6 of Law No 203 of 3 May 1982, on altering the economic destination of the holding without the parties' agreement

²⁶ See para. 4(A).

²⁷ F. Tedioli, 'I miglioramenti apportati dall'affittuario al fondo rustico' *Rivista per la consulenza in agricoltura* (2023) 88, 14

concerning both the reservoir and the installation, and the restoration and removal duties at the end of the lease pursuant to Article 1590 Civil Code, supported by an adequate guarantee covering decommissioning costs. Where rights in rem or servitudes are created (e.g. anchoring or cable servitudes), the instrument must be executed in an appropriate form, registered and transcribed to be enforceable against third parties and aligned with the requirements of certainty of the administrative procedure.

This private-law consistency, in turn, becomes a public-law requirement: the agreement thus structured constitutes the “title of availability” required in the procedure for the single authorisation (Autorizzazione Unica) of renewable energy plants²⁸. In this context, the title of availability has substantive relevance, as it is the very basis for the applicant’s standing to request the authorisation (Art. 11 of Presidential Decree No. 380/2001). Where the reservoir is located on leased land, ownership alone is insufficient: enjoyment belongs to the tenant for the entire duration of the lease. Accordingly, the tenant’s specific written²⁹ consent is a necessary precondition for submitting the application for the single authorisation.

The competent authority – typically the Region, acting through a *conferenza di servizi* – must verify the existence of such consent. In its absence, the application is inadmissible or must be closed without further action; any authorisation granted despite this defect is exposed to withdrawal or annulment in self-defence pursuant to Article 21-nonies of Law No. 241/1990³⁰, and the operator may incur liability for *occupazione sine titulo*. From this perspective, the tenant’s consent is not relevant merely in the bilateral relationship between landlord and tenant, but also in the public-law assessment of the applicant’s standing and of the compatibility of the project with the agricultural destination of the holding.

The documentary file submitted with the application should therefore reflect this dual dimension. It should include the current lease agreement, the tenant’s written consent or an addendum regulating the envisaged works and their burdens, the technical plans identifying work areas, anchoring points, access routes and

²⁸ The current general framework for the construction and operation of plants producing energy from renewable sources is laid down by Legislative Decree No. 190 of 25 November 2024, *Disciplina dei regimi amministrativi per la produzione di energia da fonti rinnovabili*, published in the Italian Official Gazette No. 291 of 12 December 2024 and in force from 30 December 2024. Article 6 identifies the applicable administrative regimes — free activity, the Simplified Enabling Procedure (PAS) and Single Authorisation — while Annexes A, B and C classify the interventions falling under each regime. For projects requiring Single Authorisation, the applicant must demonstrate the legal availability of the areas and assets affected by the intervention; where an irrigation reservoir is included in leased agricultural land, this requirement presupposes coordination with the tenant’s right of enjoyment and, where the project interferes with that enjoyment, the tenant’s express consent.

²⁹ Articles 1585 and 1615 et seq. Civil Code; Articles 16 and 17 of Law No. 203 of 3 May 1982. (It)

³⁰ Art 21-nonies of Law No 241 of 7 August 1990 (It)

cable routes, the relevant self-certifications under Articles 46–47 of Presidential Decree No. 445/2000, and, where necessary, the consent of all holders of enjoyment rights or the decision of the managing consorcial body in the case of collectively managed reservoirs.

The tenant's consent thus performs a dual function: it legitimises the project proponent in civil-law terms (standing to apply) and enables public scrutiny of compatibility with the agricultural destination of the holding and with the irrigation function of the reservoir. In this interplay, the contractual restoration clause and the decommissioning guarantee operate as a bridge between the tenant's interest and the public interest in reversibility, reducing the risk of both private-law disputes (for breach of contract) and public-law conflicts (for revocation or annulment of the authorisation).

E) Energy use as a sustainable agricultural activity

The classification of energy use of water as a connected agricultural activity is today also grounded in the principles of environmental sustainability and circular economy that increasingly shape both the new Common Agricultural Policy and the broader strategies of the European Green Deal. The energy transition in the primary sector is no longer an ancillary phenomenon, but a structural axis of the 2023–2027 CAP: the National Strategic Plan³¹ encourages the production of renewable energy by farms on condition that it contributes to emission reduction, climate resilience and resource efficiency, without impairing food production capacity or the hydraulic functionality of farm infrastructures.

From this perspective, floating photovoltaic plants on irrigation reservoirs may represent a new expression of agricultural multifunctionality, insofar as they fit within a logic of energy autonomy and improved water management, reducing evaporation losses and enhancing integrated water resource management. However, the compatibility of FPV with agricultural activity cannot be reduced to a merely formal check of “connection”. It requires a substantive evaluation of whether the plant remains functionally instrumental to the holding, viewed in the light of verifiable technical, environmental and economic indicators.

From this standpoint, the permitting stage is the point at which the project's sustainability must be demonstrated concretely. The farm should be able to

³¹ National Strategic Plan for the CAP 2023–2027 (*Piano Strategico Nazionale*, ‘PSN’) (It), approved by Commission Implementing Decision C(2022) 8645 final (2 December 2022) and subsequently amended by later Commission implementing decisions, available on the institutional website of MASAF (‘PAC 2023–2027 – Piano Strategico Nazionale (PSN)’). The Plan sets out the interventions and eligibility conditions for support under the new CAP, including, among the horizontal measures, the promotion of renewable energy and energy efficiency on farms, provided that these are consistent with the objectives of sustainability and safeguarding of natural resources

document, first, that irrigation availability and the ecological condition of the water body are maintained, and preferably improved, through a reliable water balance; secondly, that the plant remains proportionate to the farm's actual energy needs, as shown by an energy balance centred on the prevalence of agricultural self-consumption; and, thirdly, that the intervention is accompanied by an agronomic and environmental monitoring framework capable of controlling oxygenation, temperature, water quality and biodiversity impacts, while also ensuring the reversibility of the installation.

Only through such dynamic verification tools – which could be standardised by national or regional guidelines – can the sustainability of energy use become a genuine requirement rather than a formulaic clause. The establishment of a national technical framework for assessing floating photovoltaic plants, integrated into environmental impact assessment procedures and regional single authorisations, would be an essential step to ensure uniform application and legal certainty.

These elements make it possible to give concrete effect to the principles of the CAP and the Green Deal (resource efficiency, the “Do No Significant Harm” principle, biodiversity protection), demonstrating that the plant is instrumental rather than prevalent, preserves the agricultural destination of the reservoir and ensures continuity of its productive and hydraulic function. Where these conditions are absent, sustainability can no longer operate as a basis for agricultural qualification: the energy use of the reservoir loses its accessory character and falls instead within the industrial or commercial sphere, with the corresponding tax, planning and permitting consequences.

De iure condendo, the desirable approach would be an explicit recognition of sustainable energy use of water as a connected agricultural activity, subject to objective parameters of compatibility and to a balanced relationship between productive and environmental functions. Such an approach would not merely reduce interpretative fragmentation. More fundamentally, it would promote an integrated model of the agricultural enterprise in which production, energy and natural resource protection are coordinated within a single legally intelligible framework.

IV. LEGAL AND CONTRACTUAL TITLES

The legal and contractual titles examined in this section are not merely technical vehicles for project implementation; they are the legal forms through which the compatibility between energy use, water governance and agricultural function is concretely organised.

Once the need for coordination among agricultural use, water concessions, and the reservoir's private-law availability has been established, the analysis must turn to the specific legal techniques by which such coordination may be structured. The construction of a floating photovoltaic plant on agricultural water bodies requires an adequate legal basis capable of authorising both the occupation of the water surface and the energy use of the basin in a manner consistent with its original hydraulic and agricultural function. The nature of this title depends on the legal status of the reservoir (public, private or collectively owned), on the entitlement to use the water, and on the legal character of the project developer (farmer, energy operator, consortium or public entity). In the Italian system, this result may be achieved through a plurality of legal techniques – including rights of superficies, concession-based rights of use and hydraulic servitudes – whose concrete relevance varies according to the ownership structure of the reservoir, the public-law regime of the water body and the existence of pre-existing agrarian relationships, especially agricultural leases.

A) Right of superficies and ownership of the works

Where the reservoir or basin is located on privately owned agricultural land, the legal title that most readily lends itself to the construction of an FPV plant is the right of superficies³² (Art. 952 Civil Code), which enables the creation of a right in favour of a person other than the owner to maintain and use a work that is stably connected to the property. The right of superficies is fully compatible with the function of agricultural land, provided that the construction retains a functional link with the farming activity³³.

In the case of floating photovoltaics, however, the object of legal organisation is not the water surface as such, but the set of works and ancillary structures through which the plant is connected to the reservoir and to the surrounding land. For this reason, the right of superficies may be used, where structurally appropriate, as a title relating to the works, technical areas, anchoring systems, cable routes, electrical cabins and other appurtenances serving the plant, rather than as a real

³² Art. 952 of the Civil Code recognises the possibility of creating, in favour of a person other than the owner, a real right of superficies, consisting in the power to construct and maintain a building on another's land, or to acquire separate ownership of an existing structure. The right may be established for a fixed or an indefinite term and, upon expiry of the term, ownership of the works reverts to the landowner *ex lege* by way of accession. In renewable-energy practice, the right of superficies is frequently used to provide the operator with a stable legal title over the site and the works necessary for the construction and operation of the plant. In the case of floating photovoltaic installations, however, its use must be adapted to the specific structure of the project and coordinated with the legal regime governing the reservoir, the water-use title and the ancillary works serving the installation.

³³ A. Germanò, *Manuale di diritto agrario* (11th edn, Giappichelli, Turin 2023) 326 ff

right directly established over the water body itself. In this setting, the superficies does not detach the installation from the agrarian context of the holding, but may serve as one of the private-law instruments through which the energy use of the reservoir is organised, provided that irrigation use, hydraulic safety and the agricultural destination of the basin remain unaffected.

The duration of the right of superficies, which may extend beyond thirty years (Art. 953 Civil Code), must be coordinated with the term of any existing water-use concession and with the requirements of reversibility of the installation. Case law on ground-mounted photovoltaic plants has clarified that the right of superficies does not amount to an autonomous ownership right over the area, but rather to a functional and temporary power of use for energy production³⁴. Transposed to the floating PV context, this means that the superficies, where used, should not be conceived as a mechanism for the autonomous economic appropriation of the basin or of the water surface, but as a title whose scope, duration and content remain shaped by the agricultural and hydraulic function of the infrastructure³⁵.

B) Concession for the use of public water bodies

Where the reservoir hosting the plant is a public water body – as in the case of consortia reservoirs, dams, or land-reclamation lakes – the legal basis cannot be a right in rem but must take the form of a concession granted by the competent authority (the Region or the land-reclamation consortium).

Under the current framework, Legislative Decree No. 190 of 25 November 2024 governs the administrative regimes for the construction and operation of renewable-energy plants, including the Single Authorisation where the project falls within the relevant categories. In this context, however, the single authorisation does not displace the distinct public-law logic governing the use of the water body, but presupposes its coordination with the concessionary regime applicable to the resource.

The granting authority nonetheless retains the power to make the authorisation conditional upon verification of compatibility with the original water use and with the agricultural function of the reservoir. The concession must ensure reversibility of the works, environmental compatibility and protection of water quality in accordance with Articles 144 et seq. of Legislative Decree No. 152/2006 (Environmental Code).

³⁴ Cass civ sez II, 12 May 2016, n 9771 (It), *Giustizia civile* 2017, I, 411 ff

³⁵ F. Tedioli, 'Il diritto di superficie nel modello agrivoltaico avanzato: compatibilità civilistica, soluzioni contrattuali e disciplina fiscale' *Diritto e giurisprudenza agraria, alimentare e dell'ambiente* (2025) 3

Consistent with Directive 2000/60/EC, the public administration must guarantee that energy use does not compromise the ecological status of the water body and does not prejudice pre-existing agricultural or domestic uses³⁶. Accordingly, where an irrigation concession is already in force, the installation of an FPV plant cannot be treated as a neutral superimposition on the existing title, but requires either an amendment of that title or an additional authorisation expressly allowing the multiple use of the resource, together with any necessary adjustment of the concession fee and of the operating conditions attached to the use of the basin.

C) Hydraulic servitudes and agricultural agreements

Another possible legal basis is provided by hydraulic servitudes or agricultural agreements concluded between neighbouring farms, or between farmers and energy infrastructure operators. Article 1027³⁷ of the Civil Code allows servitudes to be created only where a burden is imposed on one piece of land for the benefit of another piece of land belonging to a different owner. Accordingly, in the FPV context, the relevant servitude cannot be conceived as a right established in favour of the plant as such, but only as a burden serving the objective utility of a dominant tenement or of the technical area functionally connected to the installation. Such servitudes may be relevant, for example, where the project requires cable routes, access corridors, anchoring points, mooring systems, intake-protection areas or limited use of banks and appurtenant structures. Their legal function is not to transfer the reservoir or to detach it from its agricultural context, but to make specific ancillary uses legally possible in a limited and coordinated manner, while preserving the basin's primary hydraulic and productive destination.

In practice, agricultural consortia and irrigation entities frequently resort to multiple-use agreements governing the coexistence of irrigation and energy production, with clauses safeguarding the priority of agricultural use. This contractual model is particularly suited to consortia reservoirs or jointly used

³⁶ M. Ferrari, 'L'uso dell'acqua a fini agricoli e alimentari' in L. Antonioli, D. Florenzano, F. Guella and G. Postal (eds), *Beni a titolarità collettiva e sfruttamento della risorsa idrica. Il caso della Magnifica Comunità di Fiemme* ('Quaderni della Facoltà di Giurisprudenza di Trento' No 82/2024) 139 ff

³⁷ Art 1027 of the Civil Code defines a servitude as 'a burden imposed on one piece of land for the benefit of another piece of land belonging to a different owner'. It is therefore a real right of enjoyment over another's property, based on an objective utility of the dominant tenement. In the rural and energy context, servitudes may concern rights of way, water, pipelines, cable routes, anchoring or technical access serving agricultural or renewable-energy activities, provided that the utility remains connected to a dominant land or technical area and does not amount to a merely personal advantage or to a right established in favour of the plant as such.

farm lakes, where cooperation between several parties makes it possible to balance energy generation with the sustainable management of the water resource³⁸. In these settings, the agreement serves a role that is not merely organisational but also allocative: it defines the conditions under which energy use may occur without prejudicing the common agricultural function of the water infrastructure.

Hydraulic servitudes and agricultural agreements are characterised by a high degree of flexibility: they may be established for a fixed term, include clauses on revision of fees, and regulate the allocation of maintenance and decommissioning costs for floating structures. For that very reason, however, their content must be drafted with particular precision, especially as regards access rights, operational interference, maintenance obligations, cost allocation and restoration duties. Their effectiveness vis-à-vis third parties, however, requires registration in the land registers pursuant to Article 2643(4) Civil Code, in order to avoid conflicts with subsequent purchasers of the land.

D) Reversibility and protection of the agricultural destination

Whatever legal title is used, the core principle remains the reversibility of the installation and the preservation of the agricultural destination of the asset. Reversibility is not merely a technical requirement relating to the end of the project, but a substantive legal condition for the admissibility of FPV on agricultural reservoirs, because it is what prevents the energy use of the basin from crystallising into a permanent alteration of its productive function. This requirement stems from both the current renewable-energy permitting framework, which requires the end-of-life phase and site restoration to be internalised within the authorising title, and from agrarian law, which protects the continuity of the land's productive function.³⁹ It follows that contracts, concessions and authorising measures must all be structured in a manner consistent with that objective. Contracts and concessions must therefore include clear obligations to dismantle the plant, remediate the site and return the reservoir to its original use, backed by security deposits or bank guarantees in favour of the competent authority or the

³⁸ G. Albisinni, 'La multifunzionalità agricola e i nuovi usi del fondo rurale' *Rivista di diritto agrario* (2021) 211 ff

³⁹ Under the current renewable-energy permitting framework, the obligation to remove the installation and restore the site must be incorporated into the authorising title and the related project documentation, in accordance with Legislative Decree No. 190/2024 and with the environmental and decommissioning conditions imposed under the applicable sectoral legislation. The previous Article 12(4) of Legislative Decree No. 387/2003 had already expressed the same principle by linking authorisation to the operator's duty to restore the site after decommissioning; the point now has to be read within the reorganised framework introduced by Legislative Decree No. 190/2024.

landowner. Only in this way can the temporary energy use of the water surface remain legally compatible with the enduring agricultural destination of the holding.

CONCLUDING REMARKS TO PART I

The analysis carried out so far shows that the legal treatment of FPV on irrigation reservoirs cannot be reduced either to renewable-energy law or to the law of public waters taken in isolation. Its proper legal qualification depends on the convergence of three distinct but interdependent elements: the agricultural destination of the reservoir, the public-law compatibility of the multiple use of water, and the private-law availability of the basin and its appurtenances. Only where these elements are jointly present can floating photovoltaics be framed as a legally admissible development internal to the agricultural holding rather than as an autonomous industrial use of the water surface.

Seen in this light, the first part of the study has identified the doctrinal and structural premises for the agrarian treatment of FPV: the hybrid legal nature of the reservoir, the conditions for regarding energy production as a connected agricultural activity, and the proprietary and contractual forms through which the project may be made compatible with the productive organisation of the holding. On that basis, the next stage of the analysis concerns the administrative, environmental and economic instruments through which the legal balance between irrigation use and energy production is concretely governed.

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