CNMC COMISIÓN NACIONAL DE LOS MERCADOS Y LA COMPETENCIA

Impact assessment of public support schemes for photovoltaic self-consumption (EI/02/2023)

Questions & Answers[1]

1) What has the CNMC published?

An **assessment of subsidies, tax reductions and tax deductions** for photovoltaic self-consumption (PVSC), which evaluates the impact they have had on the adoption of this technology and on competition in the markets. It also sets out recommendations to improve the coordination, design and processing of these support schemes, with a view to promoting the proper, transparent and competitive functioning of markets for the benefit of consumers.

2) How significant is photovoltaic self-consumption in Spain?

The PVSC has become increasingly important in the Spanish electricity system over the last five years. By mid-2025, the System Operator (REE) registered about **696 thousand installations** with a total capacity of **5.4 GW,** which represents approximately **19% of all installed solar photovoltaic capacity in Spain** and about **4% of the total national electricity capacity**.

Its rapid development, driven by falling solar panels costs, developments in wholesale electricity prices, the public support schemes deployed and a favourable regulatory framework, is helping to change consumption and generation patterns, reducing demand from the grid and increasing the energy injected into the grid by self-consumers.

The structure of photovoltaic self-consumption is clearly dominated by the **small-scale residential segment**, which accounts for 86% of the total number of installations and 53% of installed capacity, with an average capacity of around 5 kW per installation. Next are **small and medium-sized installations owned by companies**, which represent 11% of installations and 25% of installed capacity. Large installations in the service and industrial sectors, despite representing only 0.2% of the total number of installations, concentrate 14% of installed capacity. The public sector and other categories have a more limited share, with 2% of installations and 8% of capacity. Overall, these figures reflect the growing diversification and consolidation of photovoltaic self-consumption.

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3) What public support schemes have been assessed?

The report examines the main PVSC public support schemes in force between 2021 and 2024. These support schemes have been channelled mainly through **subsidies** financed with the Recovery, Transformation and Resilience Plan (PRTR), **local tax reductions** in various local taxes, national and regional deductions in **Personal Income Tax** and deductions in **Corporate Income Tax** in the foral territories (Basque Country and Navarra).

4) What did the PRTR subsidies consist of?

Most of the subsidies awarded for PVSC in Spain in recent years have been framed within the PRTR, financed with Next Generation EU funds after the pandemic and with REPowerEU (Component 31 of the PRTR) after the war in Ukraine, to accelerate the energy independence of EU Member States.

The programme had an initial budget allocation of **660 million euros**, which was progressively extended to reach **2,086 million euros** by June 2024. About 78% was allocated to renewable self-consumption, mainly photovoltaic. The management of the subsidies was **decentralized to the autonomous communities**, under the coordination of the **Institute for the Diversification and Saving of Energy (IDAE).** Applications could be submitted until **December 31, 2023**, but the installations and the processing of the associated payments have continued in some cases in 2024-2025 and could continue until mid-2026.

As of July 2025, **more than 420,000 subsidy files** linked to PVSC installations and coupled storage systems had been registered, with files resolved or verified amounting to a volume **of 1,498 million euros**. On average, these subsidies covered around **22% of investment** in PVSC projects, although this intensity rises to **41% in storage projects**.

5) What local tax reductions exist in Spain?

- **The Property Tax (IBI),** depending on the municipality, allows taxpayers to reduce up to 50% of their gross tax liability for the installation of PVSC. This type of reduction is widespread in Spain (64% of municipalities with a population of more than ten thousand inhabitants in 2024), However, amounts vary greatly, as this tax depends on the cadastral value, the tax rate and the number of years during which the reduction can be applied.
- **The Constructions, Installations and Works Tax (ICIO)** allow up to 95% reductions. The ICIO tax is paid only once for the installation of the solar panels, so the reduction is also applied only once. In recent years, these reductions have become popular and are already present in a large number of municipalities (63% in 2024), similar to the number of municipalities that offer IBI tax reductions. However, in practice, ICIO

reductions represent a much lower monetary saving (around a third of the estimated average amount for IBI reductions).

- **Reduction in the Economic Activities Tax (IAE)** have been introduced in more recent years and are less frequent than those of the IBI and ICIO (27% of municipalities with more than ten thousand inhabitants in 2024). There are reductions of up to 50% of the tax liabilities for companies that use or produce energy from renewable sources, with varying conditions and duration according to the municipal ordinance.

The CNMC proposes concentrating these incentives in a single tax and limiting their duration to improve efficiency.

6) What other support schemes were available? Personal income tax and corporate income tax deductions

Households that invest in PVSC installations can also benefit from **tax deductions in personal income tax**, both at the state level and, in some cases, at the regional level.

- At the state level, since October 2021, deductions of between **20% and 60%** have been applied to investments in home improvement works that enhance energy efficiency, depending on the degree of savings achieved and the type of project. These deductions are also linked to the PRTR and have been extended until 2024 (and until 2025 in cases of comprehensive rehabilitation of buildings). In 2023, more than 100,000 taxpayers benefited from them, with an average amount of around 1,900 euros.
- Several **autonomous communities** have complemented these incentives through additional deductions in the regional personal income tax bracket, with a wide variety of conditions and amounts. The cases of the **Balearic Islands** (50% up to €10,000) and the **Valencian Community** (40% up to €8,800) stand out, while other regions apply percentages of around 10-15%.

In the case of **companies**, the foral territories of the Basque Country and Navarra also offer significant deductions in Corporation Tax for companies that make investments in PVSC installations and other clean energies.

7) Why are these support schemes relevant for competition?

Public support for PVSC seeks to encourage generation and consumption of electricity at the same point of supply. **This can affect the competitive dynamics of several markets, including both the generation and retail supply of energy and third markets in which beneficiary companies operate**. The impact may be pro-competitive, by promoting a new alternative that

can invigorate competition in the affected markets, but it may also be potentially distortive, if the different levels of support received create unjustified differences between operators and markets.

8) What data sources have been used?

The analysis has been based on a wide range of sources, including **microdata from the System Operator** (REE/SIMEL until 30/06/2025), **information on subsidies** collected by IDAE, **local tax statistics** (Ministry of Finance/Cadastre) and **compilations of local tax reduction rates** (Fundación Renovables, municipal tax ordinances, etc.).

The study documents discrepancies between this database and other statistical sources of PVSC installations (RADNE, reports of sectoral associations) along with other data limitations. The referred discrepancies had been previously highlighted in the Self-Consumption Dialogue Roundtable (**INF/DE/106/24**). **All this underlines the need to move towards greater consistency and updating of sector statistics and information on the support schemes deployed, in order to facilitate future evaluations in this area.**

9) What does the econometric evaluation of the impact of the support scheme show?

The study includes a panel data econometric analysis covering more than 700 municipalities with over 10 thousand inhabitants during the period 2021–2024.

Based on the available information, the results suggest a **heterogeneous effectiveness of the support schemes depending on the type of instrument and the segment of beneficiaries**. The positive effect of the local IBI reduction for households stands out. There may also have been a **"step change" in uptake from 2022 onwards**, coinciding with the full roll-out of PRTR subsidies and national IRPF deductions. Local **factors** (irradiation, income, single-family housing) also appear to be relevant in the adoption for the household segment. Expectations **about future electricity prices** could be another important factor in the decision to invest in PVSC.

A complementary analysis examined the impact on **companies installing solar panels and related activities**, based on accounting data from a sample of firms. The findings suggest that the strong demand for PVSC installations in recent years has been met primarily through the growth and consolidation of existing companies rather than through substantial entry of new operators. The design of support schemes could be improved in some respects to avoid putting new operators at a disadvantage compared to those already established.

10) Recommendations, in brief

1. **National framework and inter-administrative coordination**: joint strategy, caps on the combined intensity of the different support schemes, digital one-stop shop, grouping of instruments, transparency.
2. **Pro-competitive and efficient design**: definition of support in fixed per-unit amounts, prioritisation of support where most needed.
3. **Faster and more neutral access**: automated procedures, ex officio grants where appropriate, more flexible advance-payment systems, concentrating support in the first year, offering financial instruments (loans/guarantees).

11) Why is coordination between administrations important?

In recent years, very diverse support schemes have been deployed simultaneously at all levels of government, which has in some cases led to situations of overcompensation, complexity and delays in processing.

Strengthening the institutional framework and coordination between administrations is desirable to minimise obstacles and costs that may unnecessarily limit access to support schemes by the interested parties, which, in general, may affect to a greater extent those companies and households with fewer resources, limiting their competitive position.

The CNMC therefore recommends **strengthening the institutional framework and coordination between administrations**:

- Establish a **joint strategy** of all administrations that limits red tape, takes into account the combined scope of public support schemes and enhances their effectiveness and stability. This strategy should ensure that the intensity of combined support does not exceed a maximum threshold, in order to guarantee the proportionality of support and generate appropriate incentives for investors.
- Consider setting up a **one-stop shop** to facilitate procedures and improve information and statistics for ex-post evaluation. This would allow self-consumers to identify and digitally apply for all available incentives – subsidies, tax reductions or tax deductions – in a single procedure.
- Assess, within each level of administration (national, regional, local), whether there is room to **group the incentives** offered through various support instruments.
- Enhance **transparency and statistics** on support schemes, defining interoperable formats that also facilitate ex-post evaluation.

12) How to improve the design of support schemes?

The intensity of public support is sometimes determined by factors not directly linked to objectives of general interest – such as the reduction of CO2 emissions – which may generate unjustified competitive advantages between companies. Moreover, the economic viability of PVSC investment has increased significantly due to falling costs, making public support less necessary for many users.

The CNMC therefore recommends moving towards a **more pro-competitive, efficient and effective design of support schemes:**

- Define support in **fixed per-unit amounts linked to objectives of general interest** pursued, replacing schemes based on incurred cost or on variables unrelated to the objectives pursued (such as the cadastral value, in the case of IBI).
- **Prioritise support** in those areas where it is most needed and effective for the system as a whole (storage or others), to avoid unnecessary distortions.

13) Why is fast processing of support schemes important?

Delays in processing subsidies and the spreading of tax reductions over several years create a time gap between the initial investment and the actual receipt of support. This may discourage or delay investment decisions, especially among SMEs and households with fewer resources, thereby reducing the effectiveness and attractiveness of these incentives and potentially generating competitive distortions.

The CNMC therefore recommends **speeding up access to public support**:

- **Speed up processing** by simplifying and automating application procedures and consider granting some support schemes **ex officio**.
- **Expand and make more flexible the system of advance payments** so that households and companies with fewer resources can meet the initial investment costs. If systems are used in which collaborating entities can process the subsidy on behalf of the beneficiary, it will be important that their involvement is optional and neutral.
- **Concentrate tax reductions in the first year** after installation.
- **Complement support with public financial instruments** (concessional loans or guarantees) in cooperation with private entities. These mechanisms can broaden access, reduce barriers for households and SMEs facing difficulties and minimise the budgetary impact, while balancing the position of beneficiaries and non-beneficiaries.

14) Where can the full study be consulted?

The full study is available on the CNMC website (EI/02/2023), in Spanish and English, together with the quantitative information used in Excel format.