

Summary of rooftop solar analysis

Location: Lisbon, Portugal

Date of analysis: Dec/2022

Recommendation: install 8 solar panels (15.6 m²), for a net present value of 6 092 euros, with a payback of 3.4 years.

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
Gov. subsidies and 75% debt	6 092	3.4	43.32	0.0257
Gov. subsidies and 100% equity	6 127	4.1	25.74	0.0254
No gov. subsidies and 100% equity	3 627	10.4	9.22	0.0483

(All rows are regarding 8 panels)

Additional results

A system of 8 PV panels, together with a battery of 5 kWh, requires an initial investment of 9 614 (battery is 4 267 EUR), which provides an NPV of 4 315 with a payback of 8.6. The same system accounting for a tracking panel for each PV panel requires an initial investment of 37 465 EUR (3 945 EUR/panel 8 PV panel 33 520 EUR) and provides a negative NPV. Therefore, there is no payback under the life of the project.

Main inputs and assumptions

Household and Economics

Electricity Consumption	3 591	kWh/year	Inflation	2.2%	per year
Electricity price – buy	0.19	EUR/kWh	Bank loan interest rate	4.1%	per year
Electricity price – sell	0.03	EUR/kWh	Bank loan maturity	5	years
			Equity cost of capital	3.0%	per year

PV panels

Peak power	390	W/panel	System losses	13.5%	of output
Panel area	1.95	m ² /panel	Degradation with age	0.5%	Per year
Useful life	25	Years	Maintenance costs	5	EUR/year per panel
			Total cost of optimal installation size (without subsidies)	3 945	EUR
			Total cost of optimal installation size (after subsidies)	1 445	EUR

Government subsidies

More Sustainable Buildings Support Program: Refund of 85% of initial investment, up to a maximum of 2.500 euros. Subsidy not currently available but assumed to be soon and done retroactively.

Some PV panel suppliers:

- [Otovo](#)
- [Ikea](#)
- [Iberdrola](#)

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