Summary of rooftop solar analysis

Location: Faro, Portugal **Date of analysis**: Dec/2021

***Recommendation**: install 6 solar panels (11.2 m^2), for a net present value of 10913.86 euros, with a payback of 2 years.*

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
[Gov. subsidies and] 100% debt	10913.86	2	68.89	0.04
[Gov. subsidies and] 100% equity	10913.86	2	68.89	0.04
[No gov. subsidies and] 100% equity	8261.86	10	10.82	0.04

(All rows are for the same number of panels)

Additional results

A system of 6 panels ("Start Line" Model by Galp), together with a battery of 3.3 kWh, requires an initial investment of 4219 €, but provides an NPV of 14798.15 €, with a payback period of 8 years.

Moreover, a system of 7 panels ("High Line" Model by Galp), together with a battery of 6.5 kWh, requires an initial investment of 6494 €, but provides an NPV of 18410.36 €, with a payback period of 10 years.

Finally, a system of 8 panels ("Start Line" Model by Galp), together with a battery of 9.8 kWh, requires an initial investment of 8699 €, but provides an NPV of 23290.50 €, with a payback period of 9 years.

All the additional results consider the government subsidies.

Main inputs and assumptions

Household and Economics

Electricity Consumption	3500	kWh/year	Inflation	1.5%	per year
Electricity price – buy	0.1777	EUR/kWh	Bank loan interest rate	0%	per year
Electricity price – sell	0.01	EUR/kWh	Bank loan maturity	0	years
			Equity cost of capital	0.17%	per year

PV panels

Peak power	380	W/panel	System losses	14%	of output
Panel area	1.9	m^2/panel	Degradation with age	0.5%	Per year
Useful life	25	Years	Maintenance costs	27.70	EUR/year per panel
			Total cost of optimal installation size (without subsidies)	3120	EUR
			Total cost of optimal installation size (after subsidies)	468	EUR

Government subsidies

Refund of 85% of the initial investment (before taxes) with or without storage system, up to a maximum of 2500 €.

Some PV panel suppliers

- https://www.edp.pt/particulares/servicos/energia-solar/paineis-solares/
- https://www.eienergia.com/pt/
- https://www.iberdrola.com/inovacao/autoconsumo-fotovoltaico

Author of this report

António de Castilho Lima

antonio.de.castilho.lima@gmail.pt

https://www.linkedin.com/in/ant%C3%B3nio-de-castilho-lima/