Summary of rooftop solar analysis

Location: Rome, Italy **Date of analysis**: January 2022

Recommendation*: install 4 solar panels (5.76 m^2), for a net present value of 3664 euros, with a payback period of 12 years.*

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
[Gov. subsidies and] 75% debt	3664	12	9.78%	0.070
[Gov. subsidies and] 100% equity	3990	11	8.94%	0.065
[No gov. subsidies and] 100% equity	2897	16	3.96%	0.051

Additional results

Moreover, a system consisting of 15 panels together with a battery of 5 kWh, requires an initial net investment of 7570€ (considering gov. subsides, 50% off the gross cost), but provides an NPV of 9207€, with a payback period of 10 years.

Main inputs and assumptions

Household and Economics

Electricity Consumption	3600	kWh/year	Inflation	2.0%	per year
Electricity price – buy	0.23	EUR/kWh	Bank loan interest rate	6.03%	per year
Electricity price – sell	0.03	EUR/kWh	Bank loan maturity	5	years
			Equity cost of capital	1.713%	per year

PV panels

Peak power	400	W/panel	System losses	14.0%	of output
Panel area	1.92	m^2/panel	Degradation (max)	0.5%	per year
Useful life	25	Years	Maintenance costs	10	EUR/year per panel

Total cost of optimal installation size (without subsidies)	6720	EUR
Total cost of optimal installation size (after subsidies)	3360	EUR

Government subsidies

Since 2019 the Italian Government introduced a subside which, in the form of a direct discount on invoice, refunds immediately 50% of the initial investment in solar panels for own consumption. However, being the installation strictly intended for the sole own consumption, a clause of the subside is the ban of selling with a feed-in-tariff the electricity produced in excess.