

Summary of rooftop solar analysis

Location: Luxembourg, Luxembourg (Cessange)

Date of analysis: Dec/2022

Recommendation: install 25 solar panels, for a net present value of 10.447,26 €, with a payback of 11,72 years and an IRR of 7,68%.

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
Gov. subsidies and 75% debt (25 Panels)	10.0173,55	12,47	8,93	0,0675
Gov. subsidies and 100% equity (25 Panels)	10.447,26	11,72	7,68	0,0664
Fundamental Analysis (3 Panels)	3.007,41	8,53	11,76	0,0782

Additional results

The most suitable course of action would be to install a nominal capacity of 10 kWp, due to the decrease in the feed-in tariff and stagnant system prices. The additional installation of a battery storage system cannot be justified economically.

Main inputs and assumptions

Household and Economics

Electricity Consumption	3.450	kWh/year	Inflation	2%	per year
Electricity price – buy	0,217	€/kWh	Bank loan interest rate	3,15%	per year
Electricity price – sell (average, entire 25-year investment period)	0,088	€/kWh; ≤ 10kWp ≤ X ≤ 30kWp	Bank loan maturity	5	years
	0,082	€/kWh;	Equity cost of capital	2,14%	per year

PV panels

Peak power	400	W/panel	System losses	14%	of output
Panel area	1,95	m ² /panel	Degradation with age	0,4%	per year
Useful life	25	years	Maintenance costs	8,5	EUR/year per panel
Total cost of optimal installation size (without subsidies (3 Panels))			1860	EUR	
Total cost of optimal installation size (after subsidies Option 2 (3 Panels))			1260	EUR	
Total cost of optimal installation size (after subsidies Option 1 (25 Panels))			12.400	EUR	

Government subsidies

The Grand Duchy of Luxembourg provides three options of subsidies as of September 2022. Option one contains a 20% investment allowance of the actual costs, including the feed-in tariff, restricted to a maximum amount of 500 euros per kWp. The second opportunity consists of a direct subsidy of 50% of the total costs, a maximum amount of 1.250 €/kWp, but excludes the feed-in tariff. Both for a system of an utmost of 30 kWp. The third option is a feed-in tariff unrestricted to the system's power.

Some PV panel suppliers

All offers from PV suppliers were communicated directly via mail. The companies are the following:

- Topsolar AS
- Solartec
- Sonalis

Author of this report

Name Simon Alfons Ziegler,
Email simon.z7@web.de,
Others <https://www.linkedin.com/in/simon-ziegler-b71632129/>