Summary of rooftop solar analysis

Location: Bonn, Germany **Date of analysis**: September 2022

Recommendation*: install 10 monosilicon modules, for a net present value of 5535.93 EUR, with a payback period of 11.22 years.*

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
[Gov. subsidies and] 75% debt	5535.93	11.22	15.35	0.1395
[Gov. subsidies and] 100% equity	5342.83	10.18	8.32	0.1418
[No gov. subsidies and] 100% equity	2426.09	14.04	5.30	0.1464

(All rows are for the same number of kWp)

Additional results

The optimal year for setting up a 10 module monosilicon rooftop PV-system is 2022. An electricity price cap at 0.40 EUR/kWh with a maturity of one year reduces the NPV for the 01/01/2023 by 707.38 EUR.

Main inputs and assumptions

Household and Economics

Electricity Consumption	3519.4	kWh/year	Inflation	[1.8, 5.5]%	per year
Electricity Buy Price	[0.42,0.85]	EUR/kWh	Bank loan interest rate	2.23%	per year
Electricity Sell Price	[0.025,0.082]	EUR/kWh	Bank loan maturity	10	years
			Equity cost of capital	2.77%	per year

PV panels

Peak power	395	W/panel	System losses	15.02%	of output
Panel Area	1.9	m^2/panel	Degradation w/ age	0.7%	per year
Useful life	25	years	Maintenance costs	26	EUR/kWp
			Total cost of optimal installation size (without subsidies)	9356.34	EUR
			Total cost of optimal installation size (after subsidies)	8961.34	EUR
			Deinstallation Costs (not discounted)	1729.22	EUR

Government subsidies

Refund of 100 EUR for each installed Kilowatt-Peak up to 30 kWp (Bundesstadt Bonn). Feed-in tariff of 0.082 EUR/kWh for the first 20 years (*EEG*) and an 2.23% interest rate on a 10-year loan (*KfW Standard 270*).

Some PV panel suppliers

- https://srwenergy.de/
- https://www.zolar.de/
- https://www.wegatech.de/
- https://scm-energy.de/

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