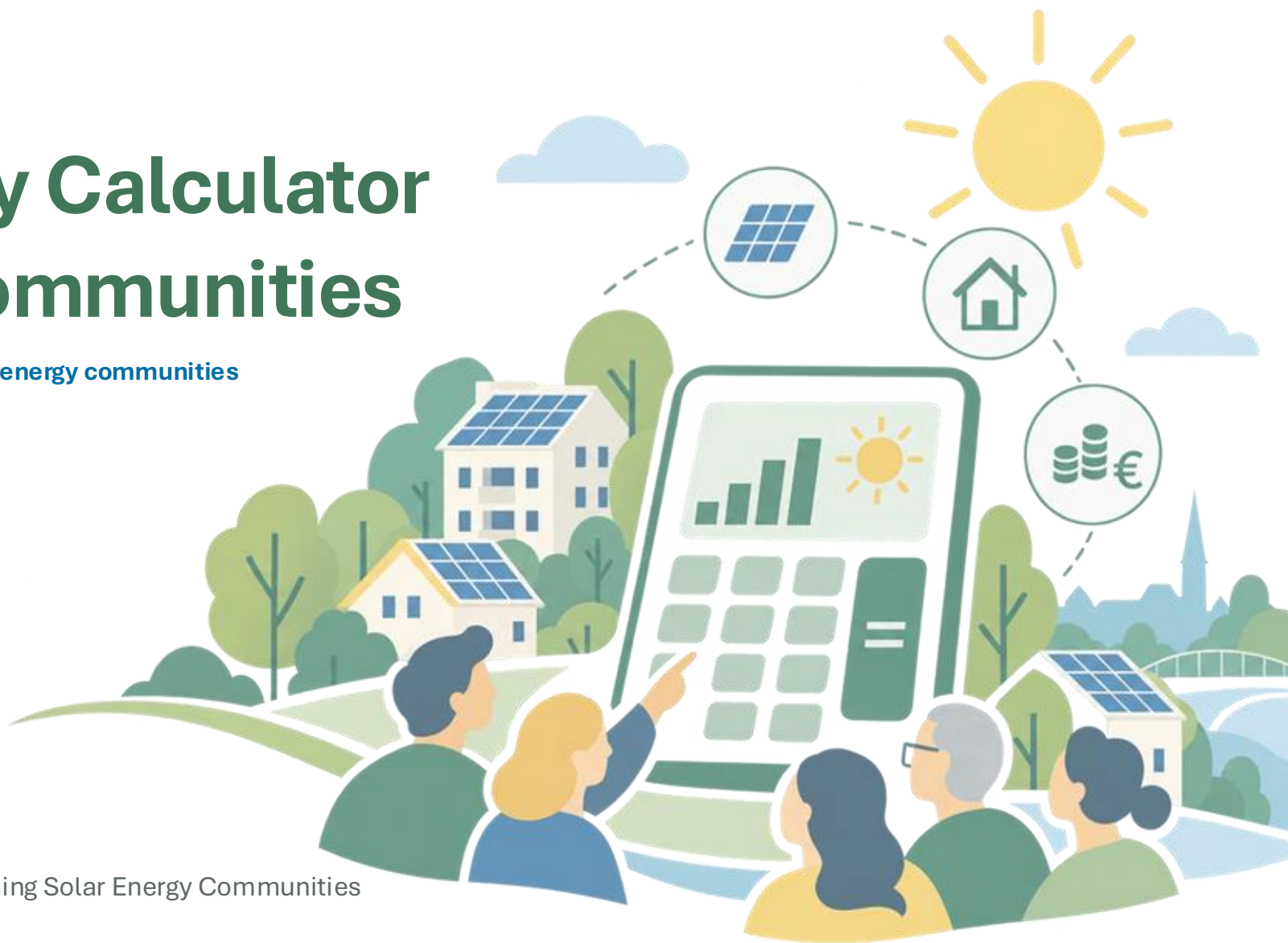


StartSun Feasibility Calculator for Solar Energy Communities

Feasibility assessment for PV, self-consumption and solar energy communities

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Why another calculator?

PV production alone is not enough — value depends on when and where electricity is consumed.

Existing tools

PV production calculators
Financial feasibility tools

Missing question

How much solar electricity can
be used locally instead of
exported to the grid?

Community layer

Can additional consumers increase
local use? Which energy-community
model could fit the case?

1 How much solar
production?

2 How much can we use
ourselves?

3 Does it make financial
sense?

4 Could a community
improve the case?

StartSun calculator connects these questions in one early-stage feasibility assessment.

Where StartSun fits

BASIC TOOLS



PV production / simple
payback

StartSun calculator
early-stage feasibility



PROFESSIONAL DESIGN



layout & shading, electrical design,
detailed simulation, grid studies

What does the StartSun Feasibility Calculator combine?

kWp

kWh

€



PV setup

Consumption

Economics

Energy community

Location, size, tilt, azimuth

Monthly demand and
simplified daily profiles

Investment, electricity
prices, savings and
financial indicators

Questionnaire and
matching with predefined
models

Model scope: up to 10 PV configurations and 10 consumption points

What do you need to start?

Very little: consumption data and a PV idea. The calculator guides the rest.

YOU BRING

1

Consumption

12 months of monthly electricity use + corresponding electricity costs

2

A PV idea

Location + a rough size (or several sizes) to test

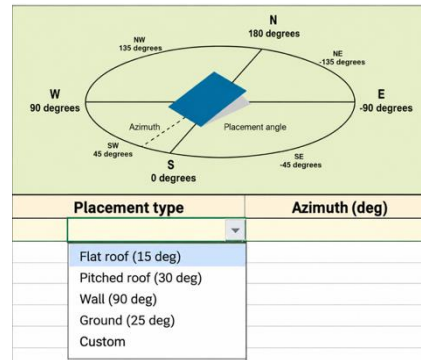
You do not need a detailed solar design to make the first assessment.

BEFORE YOU START

- Desktop Excel required
- Macros enabled and unblocked
- Visual instructions are included in the file.

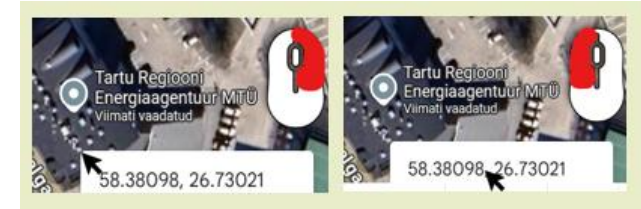
THE CALCULATOR HELPS WITH

Location - exact coordinates in just a few clicks, or simplified regional coordinates



Economics - Default investment and electricity-price assumptions are included — edit them if you know better values

Optional refinements - Grants / loans • grid export limit • battery cost assumptions (for LCOE) • **community questionnaire**



Placement & orientation - Predefined roof/ground/tilt and azimuth options; custom values possible

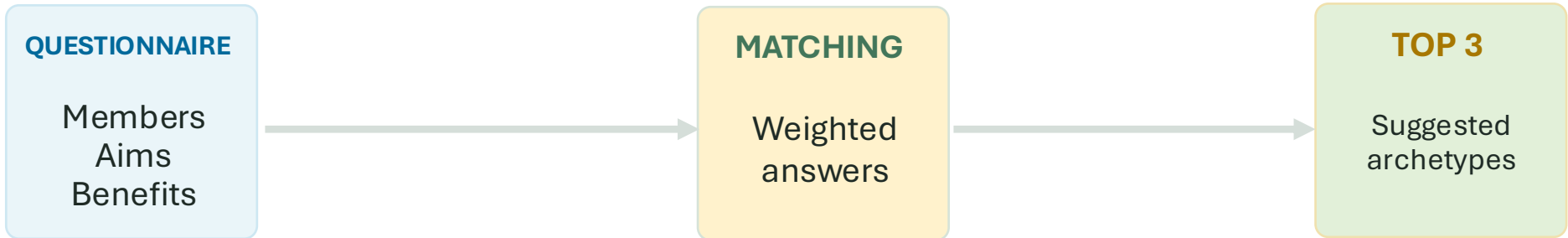
The following variables were used to calculate the estimated cost of the whole system! If changed, make sure to press "Save" again on Plant Data page!

Estimated cost per kWp (€):	700
Estimated storage cost per kWp (€):	220

Tooltips and help texts guide the user, with adjustable default values

Energy community models

A short questionnaire helps identify suitable predefined models — it is guidance.



Questions

Reset

Potential number of members?

21 - 50

Profile of main EC members?

artment association/housing compa

Potential to invite or accept additional EC members?

Not possible

Maybe (low)

Planned (High)

How you plan to distribute profit/ benefits?

Main purpose of EC?

Main goals of EC

Additional connection to grid possible?

Existing legal cooperation?

Equal accession fee?

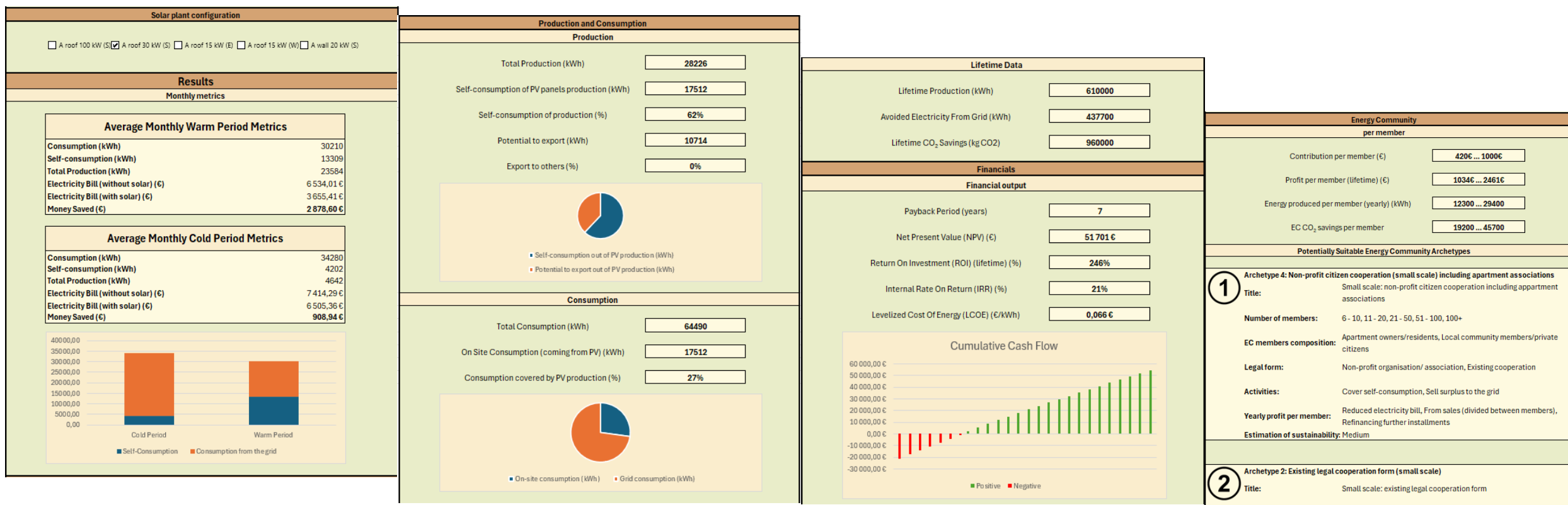
Expected voting system?

Plans for surplus energy?

- | | |
|--------------------------|------------------------------|
| Local community + SME | Existing legal cooperation |
| Municipal PV park | Industrial / SME / municipal |
| Municipal buildings | Housing company + citizens |
| Citizen cooperation | Non-profit citizens / AAs |
| Municipality + community | Existing PV prosumers |
| Community + SME | Virtual sharing / microgrid |

What do you get out?

Not one “yes/no” answer — indicators that help decide what to investigate next.



BILL IMPACT

Bill with / without PV
Warm & cold period
savings

ENERGY BALANCE

Self-consumption • PV
coverage
Surplus / sharing
potential

FINANCIAL & CLIMATE

Payback • NPV • ROI •
IRR
LCOE • lifetime CO₂
savings

ENERGY COMMUNITY

Member indicators
Matching community
archetypes

Build, switch and compare scenarios

The calculator works as a “what if?” workspace, not only as a one-off payback calculation.

Build and compare scenarios

Turn production units and consumption points on/off to compare combinations.



Consumption points

☒

Building A (apartments)

consumption

☒

Building A (common)

consumption

☐

Building B (total)

consumption



PV plant configuration

☒

Roof 100 kWp South

100 kWp

☒

Roof 30 kWp South

30 kWp

☐

Roof 15 kWp East

15 kWp

☐

Roof 15 kWp West

15 kWp

☐

Wall 20 kWp South

20 kWp



Additional settings

☐

Grid export limit

15

kW

Limit the maximum export power to the grid (optional).



Turn production units and consumption points on/off to compare combinations.

Real example — same PV, different consumption boundary

Same building and the same 30 kWp south-facing rooftop PV system. Only the electricity consumption included in the assessment changes.

PV production	Purchase cost	Selling price
28,226 kWh/year	≈ €0.22/kWh	€0.03/kWh
<i>*effective variable purchase cost incl. energy, variable grid charges and applicable consumption-based fees</i>		
Indicator	Common electricity only	Whole building
Annual consumption	9,674 kWh	64,490 kWh
PV production	28,226 kWh	28,226 kWh
PV used locally	3,763 kWh	17,512 kWh
Self-consumption	13%	62%
PV coverage	39%	27%
Surplus / export	24,463 kWh (87%)	10,714 kWh (38%)
Annual bill saving	€814	€3,788
Payback	Beyond depreciation period (25 y): 30 y	7 years
NPV	-€2,959	€51,701
IRR	4%	21%
LCOE	€0.066/kWh	€0.066/kWh

Takeaway

Matching the same PV system with more local consumption raises self-consumption from 13% to 62% and improves payback from 30 to 7 years.

Thanks

Marten Saareoks

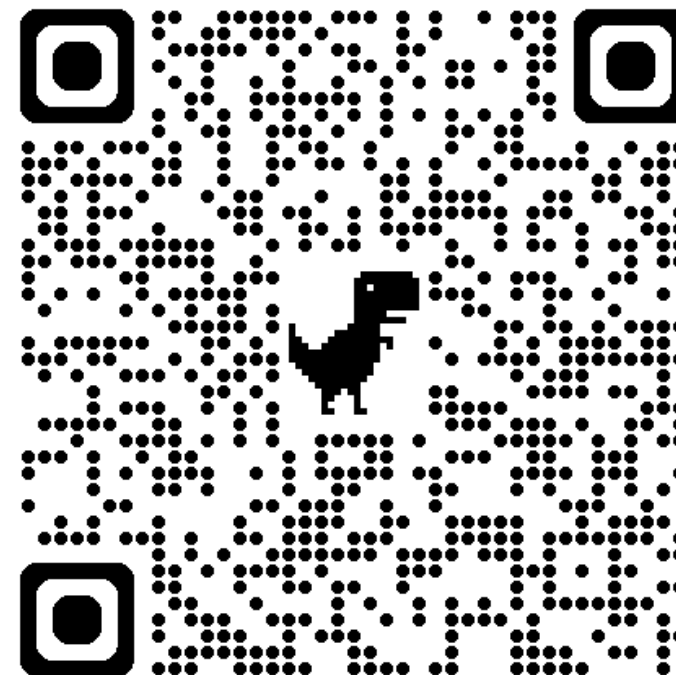
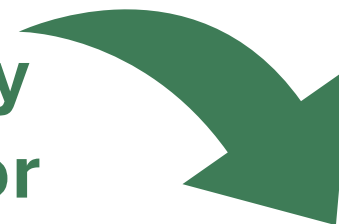


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Tartu Regional Energy Agency

StartSun:

interreg-baltic.eu/project/startsun

Try the StartSun Feasibility Calculator



Test an idea. Compare
alternatives. Decide what is
worth investigating further.