Toolbox for reaching private persons - PV4 All

September 2024

Introduction

This toolbox is a central product of the PV4All project. Photovoltaic energy is so technically advanced that this form of energy generation is not only ecologically but also economically extremely sensible. Efficiency continues to increase.

Mainly due to the geographical location of the countries in the Baltic Sea region, relatively little has been invested in the expansion of PV energy in recent years, although the usefulness of PV energy has also been proven here.

As part of our project, we have set ourselves the task of developing and, if possible, testing various small-scale solutions in order to sensitize different target groups to the topic and thereby pursue the goal of increasing the use and acceptance of this form of energy generation.

Securing the results was an important part of this for us. Above all, other institutions pursuing similar goals to ours should be able to learn from our experiences and build on them. Accordingly, we have categorically summarized our solution approaches and integrated them into a toolbox. As we were able to determine that a central differentiation of the individual tools lies in the defined target group, we divided our approaches into target group-specific documents.

The documents now available are the product of a 1.5-year process. After we had developed an initial draft, the project partners decided individually which of the approaches were particularly promising locally and depending on local circumstances (the institution's area of work; networking with stakeholders; legal framework conditions for PV in the respective country) and tested these in the form of pilot projects.

The experience gained was thoroughly evaluated and formed the basis for the revision of this toolbox. This document is the result of this revision. Activities that were carried out in the framework of PV4All are included but also activities outside the project scope are included. Each partner has contributed with activities for the toolbox. In that way the reader can use the toolbox for inspiration for PV information and of promotion activities but also read and learn about experiences from carried out activities.

Agrovoltaics I – webinar, digital lecture	
Target Group	
Private stakeholders - Farmers and land owners	
Potential of target group	
Install pV systems at farming facilities	
Issue	
Farming facilities have good conditions for installations of pVs	
Activity	
Farmers are food producers but it is an uncertain business with weather causing different crops each year. The farmers have a lot of land appropriate for installing pV. To add an extra dimension of their business they have the possibility to become electricity producers as well. By organising a digital lecture held by pV experts we want to provide farmers with up-to-date information about the possibilities about becoming electricity producers using pV panels. The lecture will be held 11 October 2023.	
Responsible institution	
Solar Region Skåne (associated partner)	
Relevant partners	
• Sustainable Business Hub • pV experts	
Resources needed	
• Internet and a computer • Expert to give lecture • Human resources to organise the lecture	
Obstacles, barriers and restrictions	
To combine pV panels in farming land and growing crops is a rather new invention. There are challenges as how close can the rows of pV panels be located and what crops are possible to grow between them.	
Piloted in PV4All	Yes
Latest news about pV and agrivoltaics	*Sweden*
Bengt Stridh, Lecturer, Mälardalen University, gave a presentation about possibilities combining agriculture and electricity production from pV panels in farming area. By having a distance between the pV panels, it is possible to farm and harvest between the rows of pV panels.	
Recommendations	
For farmers to investigate possibilities to combine agriculture and electricity production from pV panels.	

Agrovoltaics II – seminar and study visit

Target Group

Private stakeholders - Farmers and land owners

Potential of target group

Install pV systems at farming facilities

Issue

Farming facilities have good conditions for installations of pVs

Activity

Farmers are food producers but it is an uncertain business with weather causing different crops each year. The farmers have a lot of land appropriate for installing pV. To add an extra dimension of their business they have the possibility to become electricity producers as well.

In seminar experts will tell us about different technologies to use for Agrivoltaics and what findings research has concluded today about possible crops to grow when combining agriculture and pV panels in the farming land. Experts will also tell us about the economic calculations, if it is economic feasable to combine pV panels of electricity production and cultivation of crops in farming land. After the seminar a study visit is organsied to a larger pV facility on farming land.

Responsible institution

Solar Region Skåne (associated partner)

Relevant partners

- Sustainable Business Hub
- pV experts

Resources needed

- A venue where the seminar can be organised
- Human resources to organise the lectures
- Experts to share knowledge
- A site for study visit

Obstacles, barriers and restrictions

To combine pV panels in farming land and growing crops is a rather new invention. There are challenges to overcome but technology makes it possible to combine pV panels with agriculture.

Piloted in PV4All	Yes
Agrivoltaics - land owners and farmers can produce electricity from pV panels	*Sweden*

Bengt Stridh, Lecturer, Mälardalen University, and a colleague gave a presentation about different technologies of pVs to use for Agrivoltaics. They also gave information about their research of what crops are possible to use in combination with pV panels. For example, shadow can result in that there are crops better adapted to use for agrivoltaics. They also gave a presentation about the economic calculations in using agrivoltaics where electricity production and cultivation of crops are combined. A land owner presented what to be careful about when writing an agreement of rental of farming land with electricity producer company from pV panels.

Recommendations
Farmers and land owners can start to investigate possibilities to combine agriculture and electricity production from pV panels. There is technology to use and research results to study when growing crops between rows of pV panels. There is a possibility to have a good economy in using agrivoltaics but a lot of factors are hard to predict. The electricy price can for example be quite low for period of times or quite expensive for other period of time. This makes the economic calculation a bit difficult to do for a longer period of time. Also make sure to write a good agreement for the contractor of the farming land for electricity production from pV panels, if the landowner do not own the pV facility.

Building integrated pV (BIPV) – digital lectures

Target Group

Private stakeholders - Housing associations, local authorities, local energy advisors, architects, building owners

Potential of target group

Installing pV in particular buildings in cities and cultural buildings

Issue

Building and urban areas can have design requirements making it hard to install pVs

Activity

Building integrated pVs (BIPVs) have been around for quite a long time but haven´t really been implemented in the way it could and there are possibilities for improvement and increase the installation of BIPVs.

To increase knowledge and interest for BIPVs digital lectures will be organised to learn more about BIPVs and gain understanding of current market development.

The aim is to increase interest from stakeholders of the possibillities to use BIPVs and to increase interest of stakeholders to install such integrated pV panels in facades and roofs in buildings that are object to a more careful design procedure.

The lectures can be organised following way:

- Introduction BIPV
- Building integrated pVs on roofs
- Building integrated pVs on facades

Responsible institution

Solar Region Skåne (associated partner)

Relevant partners

- Sustainable Business Hub
- Planning department in a local authority
- Architect with knowledge about BIPV
- Company selling BIPV

Resources needed

- Internet and a computer
- Expert to give lecture
- Human resources to organise the lecture

Obstacles, barriers and restrictions	
There might be requirements and conditions for buildings that could be hard to meet with installing standard pV panels.	
Piloted in PV4All	Yes
	Sweden
An architect from company FOJAB gave a presentation about possible use of building integrated pV (BIPV)and real examples where they are used in buildings. Company Solelgrossisten gave a presentation of availabe BIPV on the market today. City architect in Lund presented how the city works with BIPV in facades. The company SolTech Energy presented available products on the market.	
Recommendations	
There are examples of use of BIPV in cities today and available products on the marking are growing. If a city architect wants to recommend BIPV there are information available to learn more about the product and real examples of how it has been implemented in cities. It is important the city architect understand what possibilities there are with BIPV in facades and roofs.	

Free energy advice - Information Points	
Target Group	
Owners of single-family homes	
Potential of target group	
Consumer awareness and knowledge in choice.	
Issue	
A number of companies setting up photovoltaic panels have appeared in Poland, and the companies are not always honest about the services they provide. Often there are companies that incorrectly calculate the energy requirements for the house. The owner usually does not have adequate knowledge of photovoltaics and renewable energy sources.	
Activity	
Each homeowner would get a voucher from you to meet with an expert , conduct an energy audit on the house.	
Responsible institution	
Individual public sector stakeholders	
Relevant partners	
City and Municipality Offices	
Resources needed	
The establishment of Information Points, along with the hiring of reopening experts, is a very expensive solution.	
Obstacles, barriers and restrictions	
- Insufficient information on PV + heating solutions (technical and economic). - Constantly changing legal support systems - lack of stability for consumers and investors.	
Piloted in PV4All	no

First Level Consultation by volunteers

Target Group

pensioners or students with basic knowledge of PV

Potential of target group

Find people with intrinsic motivation to boost the energy transition in a practical way and bring information regularly and frequently

Issue

Shortage of skilled workers / financial limits result in problems of getting informed easily. Previous counseling structures in Hamburg follow the principle of being sought out. This approach only reaches those who deal with the topic on a regular basis.

Activity

Low level – local consulting (One Stop Shops as a central information and advice contact point operated by volunteers).

However, a large mass of people is not concerned with the topic of PV energy and there is a potential to reach these people as well. Therefore, it is important to be at different places with consultations and thus make the topic visible and more accessible. It is not mandatory to have specialized staff to provide this service. Volunteers can take on the role after receiving basic training.

Responsible institution

If there is an institution with the mission to consult on questions around energy provision

Relevant partners

- Any local groups or non-profit associations could be relevant
- Students
- Pensioners

Resources needed

- Someone who is able to educate volunteers into first level consultants
- Information platform to make the offer known (existing websites or social media networks can be used)

Obstacles, barriers and restrictions

Engagement of volunteers is hard work

Legal consequences of the advice: The advice is only intended as orientation advice and does not replace professional support by installers or energy consultants for larger projects.

Piloted in PV4All	no

Guide for plug-in PV in simple language

Target Group

Tenants in large multifamily houses

Potential of target group

People that do not own a home have had very few opportunities to produce renewable energy on their own. Accordingly, this topic is not widespread among these people either, although the financial advantages of balcony power plants would be helpful especially for people with lower income.

Issue

The problem lies in reaching as many people as possible. There is existing information about balcony power plants, but mostly in very complex language. Especially for people who are relatively uneducated and moreover for people who do not have German as their mother tongue, there is no targeted information.

Activity

In general, the purpose of this guide is to generate awareness and encourage people to consider the option of balcony power plants. The rough facts about plug-in PV and the usage as well as the advantages are summarised on the guide in the form of a poster that can be displayed in entrances and hallways of multifamily houses, supermarkets or community centres. This guide should also be available in several languages to address as many people as possible in their native language. In the second step, it is important to be able to forward interested parties to a personal contact which will advise on further questions (e.g. a non-profit association that is specialised on plug-in PV). The goal is to find pioneers who can then act as multipliers by increasing the number of balcony power plants on balconies, so that other people automatically start thinking about them.

Responsible institution

- housing companies

- institution that produces and updates the guide

Relevant partners

- Institution to answer questions
- translators

Resources needed

- a graphically appealing guide/poster with the most important information that attracts attention
- internet platform to provide translations

Obstacles, barriers and restrictions

It is not a given that people will actually be reached in this way. There may also be reservations from the homeowner, so that the posting is not allowed in the first place.

Piloted in PV4All	Yes, in:
Simple language guide for plug-in PV	*Germany*

The guide is available as a small Flyer and a bigger poster. The guide is in German, but in order to address more people, we have the information translated into 11 languages. The information in the specific language is accessible with a QR-Code on the Flyer/Poster.

Recommendations

It is challenging to find the balance between conveying relevant information but keeping it simple so that almost everyone understands the content. In addition, it should be ensured that the content is legally compliant.

Information booths at events

Target Group

Tenants in socially disadvantaged neighborhoods

Potential of target group

Saving money for people with financial issues / empower more people to act proactively in the energy transition

Issue

In Germany

Hard to reach as topics around energy transition attracts mainly people with financial capital/own real estate/higher education degrees

Activity

Short description

Being visible with the topic in a context near the target group on a communication level coordinated according to the target group: providing low level information on summer festivals in the neighborhoods

Responsible institution

No explicit responsibility known

Relevant partners

- Local associations
- local NPOs
- local administration

that work with topics around climate change/energy transition or even in a social way in these districts

Resources needed

- time of people to prepare information and to be present at the festivals
- If possible, use demonstrative models to attract attention and get people engaged, e.g. a plug-in PV module with a connected power consumer such as a microwave, lamp, etc.

Obstacles, barriers and restrictions

Information is only the first step, as also small power plants such as balcony power plants are too expensive for lots of people from the target group

Piloted in PV4All	Yes
Summer festivals in neighbourhoods that are managed by the Lawaetz Foundations	*Germany*

Recommendations

Make sure to have some eyecatchers, to raise attention. The challenge is to get people in touch with a topic, which is not present in their everyday life.

Information booth at German Unity Day	*Germany*

Recommendations

The variety of interested people is huge. There will be experts at your booth and also people with no experiences. Make sure that you always adapt your communication to the person's knowledge.

Lighthouseproject for media attention on plug-in PV

Target Group

Private people, politicians, decision makers, policy maker

Potential of target group

Private individuals who live in apartments (rented or owned) who cannot install solar panels on their own roof can use their balconies for plug-in PV.

Issue

The possibility of installing solar systems on balconies is not yet widespread and there are many questions about implementation and uncertainties due to media reports about risks such as fire.

Activity

To make plug-in PV for balconies better known, the aim was to equip a building with as many modules as possible. In order to provide an incentive for as many parties as possible to participate, a sponsor was sought who would offer the modules free of charge. The first aim is, to have a building in a neighborhood, which gets attention due to the high number of balcony power plants. The second aim is, to make the installation to an event, which is accompanied by media to spread the information and draw attention.

Responsible institution

Different possibilities, such as:

- Housing company
- Private owner of a multi-family house
- NGOs

In general you need an institution in response with the interest of organizing the action

Relevant partners

- Sponsors for the power plants
- Media
- Tenants with the interest of having a balcony power plant

Resources needed

- Expertise in public relations
- Access to multi-family houses and the tenants
- Solar modules, inverters & superstructures
- Knowledge in installing the power plants

Obstacles, barriers and restrictions

The hardest part was to find a suitable building (sufficient sun; balconies; external sockets) with several interested residential parties.

Piloted in PV4All	Yes, in:
Lighthouse project plug-in PV equipping a block of flats with numerous plug-in PV	*Germany*

It was harder than expected, to find a proper building, where the tenants and the landlord, both like the idea and are motivated to participate. As it is, without any doubt, clear, that tenants benefit from such an installation in an economic way, this is a finding, which makes clear, that we still have a long way in the energy transition and it points out, that it is important, to reach more people with the topic.

Recommendations

You should calculate a lot of time for planning and need to be an expert in answering questions around plug-in PV. It is recommended to start such in initiative with expertise in the work with media (to ensure, you reach the aim of drawing attention), technical know-how to convince people of the need and some time for planning.

Local solar ambassadors and solar parties	
Target Group	
Private homeowners	
Potential of target group	
Private homeowners have the opportunity to install PV on their own roofs.	
Issue	
For some people, seeking outside expertise is too much effort. They feel more comfortable in a familiar environment.	
Activity	
Several studies show that the likelihood of having a solar system installed on your own roof is strongly linked to the visibility of existing solar systems in the immediate vicinity. Therefore, neighborhood information campaigns and solar parties are organized. Here you can find solar information from and for neighbors: authentic experience reports, solar systems in live operation, community discussions. And on top: professional expertise from so-called solar ambassadors who have been specially trained by experienced solar experts.	
Responsible institution	
Voluntary network, preferably coordinated by an association (in Germany Solarenergieförderverein Deutschland e. V.)	
Relevant partners	
• no institutions needed, but volunteers • Settlers' associations, neighborhood networks to get in contact with home owners • Home owners that are willing to host a solar party	
Resources needed	
• Volunteers	
Obstacles, barriers and restrictions	
Time and financial ressources as the organisation is carried by volunteers	
Piloted in PV4All	no

Local solar support groups

Target Group

Private homeowners and apartment tenants

Potential of target group

Private homeowners and, with restrictions, apartment tenants have the option of installing plug-in PV.

Issue

The topic of balcony solar is very widely represented in the media in Germany. Nevertheless, there are things that need to be considered. Even though there are online tutorials and information available, many people feel too unsure. Associations can help here by being on site, advising people and reducing uncertainty.

Activity

The association supports the installation of plug-in PV

- Formation of solidarity self-building communities;
- technical support in planning, approval, construction and acceptance;
- Organization of cost-effective collective orders;
- Support with official registration and dealing with landlords

Interested parties are trained in webinars about 11 steps to their own balcony power plant. Afterwards, they can participate in a collective order and benefit from low prices. With the solidarity approach, some who can afford it pay more for a module, so that people on low incomes can get cheaper modules. The association can also help with the installation of the modules.

Responsible institution

Voluntary network, preferably organized as an association (in Hamburg Soli-Solar e.V.)

Relevant partners

- Funding institutions such as local climate fonds or local public authority in charge of environment to fund the activities of the volunteers
- Platform to give the organisation visibility to gain more members

Resources needed

- possibility to inform digitally or on site in rooms
- Storage location for modules if collective orders are offered
- a network of people with plug-in pv know-how and time to inform and organise

Obstacles, barriers and restrictions

Since the organisations work on a voluntary basis, it is difficult to respond to high demand.

Piloted in PV4All	No

Permanent exhibition in building advice center	
Target Group	
Private homeowners and apartment tenants, craftsmen	
Potential of target group	
Private homeowners and, with restrictions, apartment tenants have the option of installing plug-in or normal scale PV. Craftsmen can inform their customers about solar options and learn about them themselves	
Issue	
Private homeowners are informed about the possibilities and different modules of photovoltaics	
Activity	
In a permanent exhibition, various types of photovoltaic modules, their peripherals, their mounting options and other technical details are demonstrated and explained by experienced consultants. The exhibition can be part of a one-stop-shop that offers private households comprehensive support in the modernization process and installation of photovoltaic systems, including support in finding construction experts and mobilizing financial partners. The exhibition takes on the function of illustrating the technical options, which are abstract for the layman, and of overcoming the inhibition threshold and being a decision-making aid. The exhibition must evolve dynamically and reflect developments in the market. The advice in the exhibition is also aimed at all target groups - specialists such as craftsmen, engineers and energy consultants, the housing industry, traders, property owners and builders.	
Responsible institution	
Municipal administration, chambers of craft or consumer advice centers	
Relevant partners	
• Companies that sponsor models	
Resources needed	
• Premises best in a central location in the city or region • Current models of solar modules • Advisors to explain the application possibilities	
Obstacles, barriers and restrictions	
Piloted in PV4All	No

Promotion of combined (hybrid) heating using PV + heat pumps for heating of new and/or renovated buildings

Target Group

- *Developers of new housing;*
- *Developers of buildings renovations;*
- *Installers of PV and/or PV + heat pumps for heating in buildings;*
- *District heating companies, interested in finding individual solutions for buildings, which can't be connected to DH networks.*
- *Municipalities*

Potential of target group

act as multipliers to potential PV users

Issue

Combined heating (PV + heat pump) systems as decarbonization possibilities for new and/or renovated buildings, which cannot be connected to District heating and are often using natural gas and/or solid fuel boilers.

Activity

- *Educative webinar*
- *Targeted information to target groups, stakeholders on branch association website (2024):*
- *Information in branch journals (Thermal Technology), available for installers and interested households (2024).*

The bundled version of all information provided during the events under PV4All project was prepared in English and can be presented to interested stakeholders in BSR countries.

Responsible institution

LEI

Relevant partners

- *Lithuanian Solar Energy Association (LSEA)*
- *Lithuanian Association of Thermal Engineers (LTERA).*

Resources needed

PC, Internet

Obstacles, barriers and restrictions

Technical barriers:

- *Insufficient grid capacity.*
- *Lack of PV panels and inverters due to equipment supply bottlenecks and lack of kit parts.*
- *Insufficient information on PV + heating solutions (technical and economic).*

Financial barriers:

- *Limited funds for support.*
- *Only equipment is supported, and there is no support for work, so payment can be not transparent (financial actions performed in cash)*

Legal barriers:

- *Constantly changing legal support schemes – no stability for consumers and investors.*
- *Volatility in the formation of the electricity purchase price*

Piloted in PV4All	Yes
Webinar "PV for Heat Generation"	*Lithuania*

Short description

The educative webinar was implemented in September 13, 2023. It has covered various aspects of combined (hybrid) heating using PV + heat pumps for heating of new and/or renovated buildings, starting with legal, political and support issues, various technical/economic issues for district heating companies, multiapartment blocks and individual houses, including good practice examples. Total number of registered participants was 67, including developers of PV and Heat pumps solutions, designers of buildings, municipalities, district heating companies, academicians, individuals. Seminar was a success, as caused many questions and discussions. Instead of 2 hours, the webinar lasted for nearly 3 hours, which shows the growing interest in the issue.

The presentations were made available for all interested parties (in Lithuanian).

Seminaras „Saulės elektra šilumos gamybai“ – Lietuvos energetikos institutas (lei.lt)

Article in branch Journal THERMAL TECHNOLOGY Magazine of Lithuanian District Heating Association (LDHA) and Lithuanian Thermo-technical Engineer's Society (LITES) “PV for Heat Generation”	*Lithuania*

Short description

This article is based on the proceedings of the workshop of the same title and was funded by the PV4All project. The article covers the following topics:

- *Combination of heat pumps and PV plants: advantages, assumptions, opportunities and risks;*
- *Solar thermal applications in apartment buildings: good practices;*
- *Technical and economic estimate for solar PV and heat pumps;*
- *Economic evaluation of heat pump systems;*
- *The potential of solar PV for decarbonization of district heating systems.*

The article was elaborated by experts of Lithuanian Thermal Engineering Association, Kaunas University of Technology, Lithuanian Solar Energy Association, and Lithuanian Energy Institute.

Journal with article (p. 17-23) can be downloaded in Lithuanian:

Žurnalas „Šiluminė technika” – Lietuvos šilumos tiekėjų asociacija (lsta.lt)

Recommendations

Such type of webinars are to be arranged in close cooperation with PV and heat pumps experts to make information professional.

Information from the webinar is presented in the bundled version of all material provided during webinars in Lithuania in English version.

Promotion on mini Plug-In PV (on balconies, terraces, garages., etc.) for apartments and small individual houses (Lithuania)

Target Group

- *Developers of PV installations;*
- *Installers of PV, traders of PV;*
- *Apartment and individual house owners, housing associations;*
- *Researchers, academicians;*
- *Architects, towns developers.*

Potential of target group

Getting informed about potential (no grid congestion as power is used within the house and not fed into the grid)

Issue

Though such systems are extremely popular in e.g., Germany, in Lithuania, the idea is not only viewed with suspicion, but without permission, it may be also subject to fines. Since November 2023 such regulation was introduced and the permission to install is easy to obtain with the requirement to provide technical documentation of PV plants only for energy supplier. Due to new and not well known situation of mini Plug-In PV systems in Lithuania, there is also lack of more extensive information on technical, economic benefits for less electricity consuming population.

Besides, available information from Germany regarding the issues, which should be regulated, could be also useful with regard to regulation.

Activity

Activity will be performed via:

- Targeted information to target groups, stakeholders, apartament and house owners on the websites of branch associations (e.g. Lithuanian Solar Energy Association, Lithuanian Solar Energy Development Association, etc.) (2024).
- Targeted information to stakeholders, such as PV developers via information from Germany using information provided by German colleagues (2024).

Responsible institution

- *Lithuanian Energy Institute*

Relevant partners

- *Lithuanian Solar Energy Association*

Resources needed

PC, Internet

Obstacles, barriers and restrictions

The main obstacles are:

- *Lack of regulation for Plug-in mini PVs (up to 800 kW) in Lithuania, which makes implementation doubtful, though there is some promotion and supply of such plants. The reaction of electricity supplyers may be unpredictable,*
- *Architects will most probably be opposing to such solutions for already existing buildings, as they usually require to align the permission with regard to change the façade of the buildings. Such procedures may be long and not satisfactory to residents.*
- *Balcony PVs were allowed in Lithuania in November 2023 and since then are gaining some popularity and interest from municipalities and private persons, since there is not much information about them in Lithuania.*

Piloted in PV4All	Yes
Seminar on Balcony or mini PVs in Lithuania	*Lithuania*

Short description

The educative webinar was implemented in March 6, 2024. It has covered various aspects of mini Plug In PVs in Lithuania, such as What are Mini Plug-Ins, technical aspects, regulation; Economic aspects of Investment; Testing of modules with regard to use them for balcony and other PVs; Buildings renovation, mini Plug-Ins and attitude of Architects; Attitude of ESO (Energy Distribution Operator). The webinar ended with extensive questions and discussions with interested participants.

Total number of registered participants was 116 (participated at least 93), which shows great interest in the topic, as it is the new development in PV sector. The variety of participants, including municipalities, energy companies and developers, electricity suppliers, some national authorities, associations, academicians, individuals. Seminar was a success, as caused many questions and discussions. Consumer's Alliance informed that they have already started the project with 10 new pilot installations in apartments in Vilnius, which will be monitored for a year under the project.

The presentations were made available for all interested parties (in Lithuanian).

Seminaras-diskusija „Balkoninės saulės jėgainės" – Lietuvos energetikos institutas (lei.lt)

Recommendations

Professional presenters involved in the activity raise the quality of the webinar, which makes such events popular among interested participants.

Wider decription is provided in above mentioned bundled version in English.

Regular solar consulting offers	
Target Group	
Private homeowners and apartment tenants	
Potential of target group	
Private homeowners and, with restrictions, apartment tenants have the option of installing plug-in or normal scale PV.	
Issue	
Private homeowners are informed about the possibilities of photovoltaics at street and neighbourhood festivals.	
Activity	
Through information poster and demonstration objects, interactive advice is provided on the use of solar energy. This includes an explanation of the components required for a photovoltaic system and a discussion of the steps from planning to system implementation. This provides interested individuals with a solid basis for making decisions regarding their solar energy project.	
Responsible institution	
Municipal administration, chambers or consumer advice centers	
Relevant partners	
• … • …	
Resources needed	
Information material (flyer and poster) and system components, such as PV module, inverter and energy meter, mounting material for various applications.	
Obstacles, barriers and restrictions	
Piloted in PV4All	No

Solar calculator

Target Group

For people looking for information about solar energy or reading solar news

Potential of target group

More knowledge to make decisions

Issue

Targeted information for different target groups

Activity

In Finland, we need unbiased information because telephone and door-to-door salesmen sell their products, sometimes half-heartedly. The elderly population in particular can fall victim to this type of buying behaviour. The dissemination of objective information through the various media would therefore be of paramount importance.

Things that should be talked about more: System sizing, system installation and commissioning checks, snow load on panels (and how to avoid it) ....

When people make a purchase decision based on their own knowledge (rather than a sales pitch), it also improves the user experience and spreads positive images more widely, for example to people they know.

We wanted to come up with a way to easily find unbiased information about solar power systems and their sizing. We thought that a solar electricity calculator could be an easy-to-use and informative tool for our problem. We developed a solar calculator that helps in dimensioning a solar power plant.

Such a calculator has not previously been available in the Finnish language.

Responsible institution

Benet Solutions, Motiva

Relevant partners

- Motiva
- Solar Energy Association

Resources needed

- Time
- Money
- Computer

Obstacles, barriers and restrictions

What kind of advertising or marketing would best reach people.

Piloted in PV4All	Yes
Title of the local implementation	*Finland*

We built a solar electricity calculator based on Excel. With the easy-to-use calculator, you can get an unbiased sizing estimate for purchasing your own photovoltaic system

With the calculator, you can estimate the monthly production of the solar power system to be installed on the roof of the property and compare it with your own monthly consumption

During March-September, daylight consumption can be estimated in more detail by entering consumption data on operational electricity during the dark hours of the day into the calculator

Since the use of solar batteries has not yet been widely marketed in Finland, we did not include them in the calculator. However, the counter mentions the possibility of using batteries. *The calculator shows an estimate of the system's overproduction, i.e. the share of electricity production going up for sale.* *In addition, the calculator shows the impact of solar power on the carbon footprint of your utility electricity.* *When person uses calculator, she/he needs:* *Location information:* *residential area* *roof angle* *orientation of the panels to be installed* *shading* *Your monthly electricity consumption data from your electricity company* *For a more accurate estimate in March to September, you will need hourly electricity consumption data during the dark time of day* *A computer and an Excel application*
Recommendations
This kind of calculator is new in Finland. We share it as much as possible and give it free to every use.

Spreading the knowledge

Target Group

The target group is practically all people. We wanted to reach less well-off people living in sparsely populated areas

Potential of target group

Potential solar system backers and buyers

Issue

Events and libraries, parishes, shops and pensioners' clubs

Activity

Our goal is to spread a clear and unbiased assessment of solar energy to consumers. We also want to share information with the less wealthy. Our most important idea was a solar calculator, which allows you to easily calculate the sizing of solar energy (tool 4). First, we developed a counter. After that, we print a brochure with information about solar energy production and the solar calculator we developed.

Responsible institution

Benet Solutions

Relevant partners

- Solar energy association
- Energy Advisors
- Libraries
- Summer events
- Parishes
- Shops
- Senior meetings

Resources needed

- Money and time
- Brochures and other material
- Traveling

Obstacles, barriers and restrictions

Lack of resources.

Piloted in PV4All	Yes
Title of the local implementation	*Finland*

We had a partner with Energy Advisors. We printed 1000 brochures (4 pages, A5) and 100 posters (A4). We went to summer events with a tent and brochures (2 locations). We drove to many libraries, churches, shops, retirement clubs in Central Finland area and distributed brochures (40 places). We wanted to distribute brochures all over central Finland area, because one of our target groups is an elderly or unemployed person living in an old, detached house in the country, who has a risk of energy poverty.

Recommendations

This was the best option to contact Finland's energy poverty people. They are maybe not using computers, and that's why we chose to print a brochure.

Wider information for housing communities and cooperatives	
Target Group	
residential communities and cooperatives	
Potential of target group	
Saving money for the financially challenged / enabling more people to be proactive in energy transition.	
Issue	
In Poland, for there to be a possibility of installing PV systems, the community must agree to the investment, quite often it is the case that several residents will not agree to it for financial reasons.	
Activity	
- More information to residents about subsidy programs and the advantages of renewable energy sources, - Coordination and organization of infomation meetings,	
Responsible institution	
Provincial Environmental Protection Fund	
Relevant partners	
City and Municipality Offices	
Resources needed	
Coordinator of meeting organization.	
Obstacles, barriers and restrictions	
Information is only the first step, because also small power plants, such as balcony power plants, are too expensive for many in the target group. Although photovoltaics on the balcony are associated with lower costs than in the case of standard installations, but we are still talking about an expense of several thousand zlotys. In order to obtain a subsidy, it is necessary to meet certain conditions, such as obtaining permission from the community or building management. As highlighted by users on various forums, community groups , the administration is very reluctant to agree to this type of installation. Neighbors are also often against it, although they themselves do not lose anything from it. Promotional campaign regarding information on the benefits of renewable heat sources.	
Piloted in PV4All	no