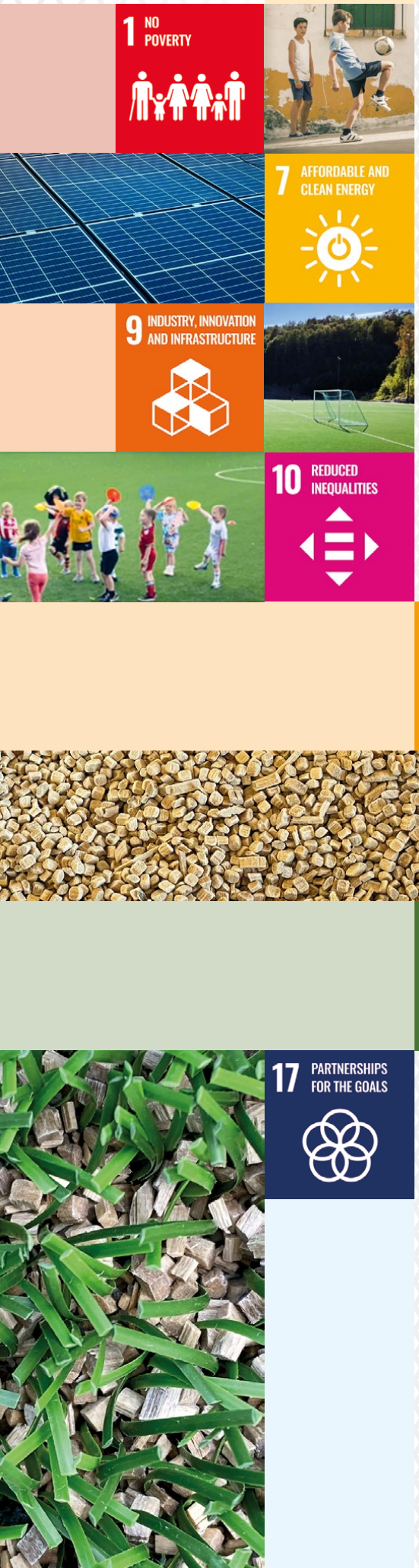
SDG Striker
Scoring Goals for Sustainability

SDG Striker practitioner's guide on replicability and policy recommendations

INTELLECTUAL OUTPUT 3

Co-funded by the Erasmus+ Programme of the European Union

SUSTAINABLE DEVELOPMENT GOALS



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1 Introduction

Even though the sport is more and more internationally recognized as a crucial enabler of sustainable development, there are not yet enough reference models at the grassroots level on good governance of sustainability values and how to communicate them.

Over the last decade, some European Sports Federations and clubs leading on sustainability action have established a Corporate Social Responsibility (CSR) department to define and implement a CSR strategy. This department's ultimate goal is to put in place mechanisms that unleash the clubs' full potential for better governance and sustainability action while reducing energy costs in the long term and attracting eco-friendly fans. Unfortunately, not all European FAs have addressed good governance equally, and even less when it comes to sports in general. That is where the SDG Striker project aims to help.

Executive summary

SDG Practitioner's Guide aims to show the implementation and guide for replication of the 3 pilots. The Norwegian Football Association's pilot to develop new alternatives to conventional infill for artificial football pitches. The Scottish Football Association's pilot to educate about energy efficiency and energy poverty. And the Portuguese Football Federation's pilot of the implementation of PV solar panels.

Each pilot's description is divided into 3 parts: Introduction with the goal, Implementation of the pilot and the Recommendations. The introduction with the goal answers what is the pilot about, what are the goals, what is the scope of the project and how to achieve the goals. The implementation shows how the federations executed the pilot and how can it be replicated – what to think of beforehand, what are the steps, what needs to be done and what is needed for the implementation. Lastly, the recommendations explain what the main challenges during the pilot were, how to deal with them and what to do better for replication.

SDG Striker

The SDG Striker project aims to increase the organisational capacity for **Good Governance in grassroots sports organisations** by producing compelling and accessible materials with ideas, tools and resources that showcase replicable best practices in European countries.

The project's coordinator **Ecoserveis** is responsible for the overall control over the project's life span. The technical partners, the Energy Institute at the Johannes Kepler University Linz **(EI-JKU)** and European Football for Development Network **(EFDN),** serve the role of scientific experts addressing the practical guidelines, best practices and using football as a tool for social development.

Coordinator

ecoserveis

Technical partner

EFDN

Technical partner

ENERGIE INSTITUT
an der Johannes Kepler Universität Linz

***Football Associations** (FAs) implement the project in the field and provide valuable outcomes. They also provide their expertise in grassroots sport event organisation and management.*

NORWEGIAN FOOTBALL ASSOCIATION (**NFF**)

SCOTTISH FOOTBALL ASSOCIATION (**SFA**)

PORTUGUESE FOOTBALL FEDERATION (**FPF**)

2

Practitioner's Guide Methodology

The SDG Striker Practitioner's Guide methodology uses **4 main elements** to create a practical guide for replication of the 3 pilots - energy efficiency and energy poverty, Photovoltaic (PV) deployment and microplastics in the context of artificial turf infill material.

1

Implementation and collection of data of the 3 pilots. The execution and data analysis of each pilot are crucial elements for the creation of a practical guide for interested organizations.

2

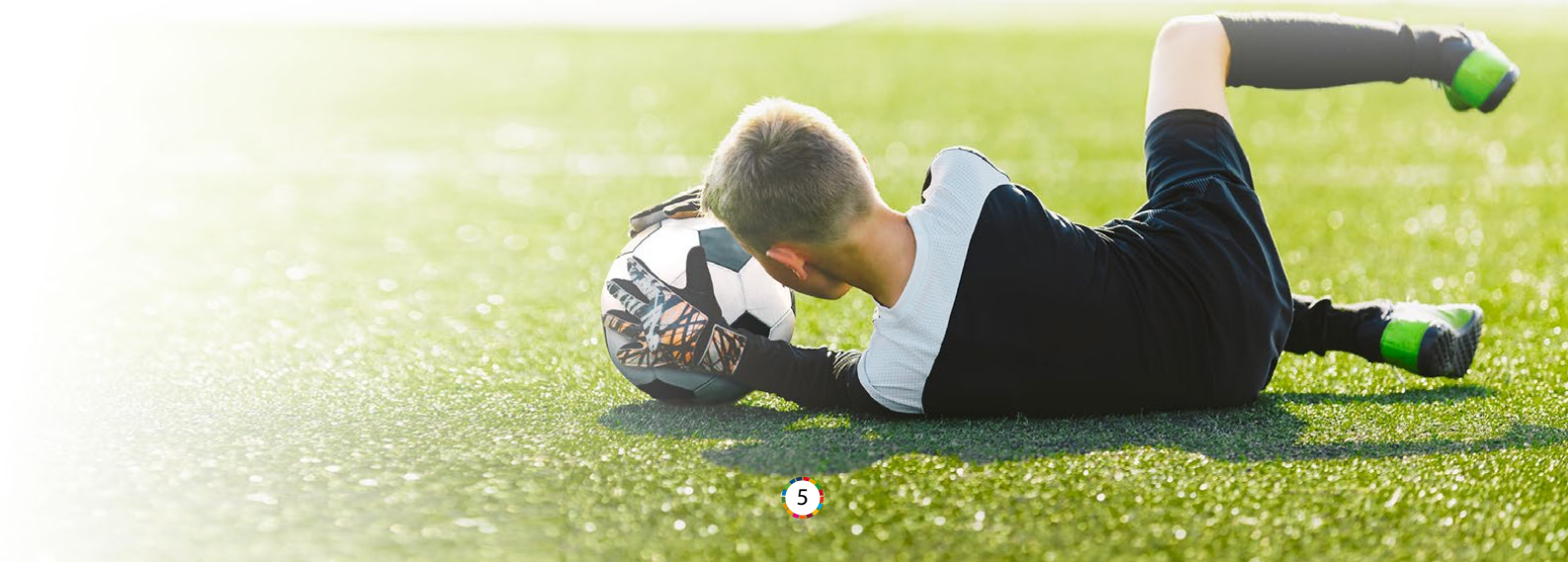
A template for input from the pilots is then created to collect the most necessary information about the implementation and findings of the pilots. The FAs fill in the template with the most interesting and important information that can be used by the organizations for the replication of the pilots.

3

Reviews and comments from the partners. The last crucial element before designing the practical guide is the review from the partners. The feedback from the partners is then used to finalize the guide.

4

Creating a design and dissemination of the practical guide to the interested organizations.



3 Objectives

SDG Striker objectives

The objectives of the whole SDG Striker project are:

- Elaboration of **practical guideline** for the three focus areas of good practice on energy efficiency, photovoltaic units and turf filler.
- Design and implementation of **3 pilots:**
  - A document on greener alternatives to microplastics to be used as infill material for artificial football pitches, including a Life Cycle Assessment and a comparative environmental impact analysis of new technologies (Norway) – Tackling SDG 9, 11, 12, and 13;
  - A campaign to increase the efficiency of sports' facilities and raise awareness on energy poverty, including training actions to reduce energy bills (Scotland) – Tackling SDG 1, 7, 10, 12, 13 and 17;
  - A feasibility study to evaluate the costs, return and other social and economic impacts of installing PV solar panels in sports' facilities (Portugal) – Tackling SDG 7, 11, 12, and 13.
- The organisation of **multiplying events, conferences and direct meetings** to disseminate the project's main outcomes.

Practitioner's Guide Objectives:

There are 2 main objectives of the strategic guide for practitioners:

- Design a **strategic guideline** about how to **replicate** and overcome barriers in terms of implementation, targeting FAs, grassroots clubs and leagues level.
- Create a **set of recommendations** for FAs and clubs to draw local, national and European decision-makers' attention to the potential of sport as an SDG enabler.

4

ECOLOGICAL INFILLS FOR ARTIFICIAL PITCHES

Norwegian FA (NFF)

Introduction to project

Rubber infill has been widely used for several years and has proven to be effective in replicating the playing characteristics of natural grass, making artificial grass pitches durable, weather-resistant and providing shock absorption. With a likely ban on rubber infill in the European Union, with a six-year transition, a need for new alternatives that fulfil the environmental criteria without compromising on performance and player safety is needed.

For many young people, participating in a grassroots football team can help them develop important life skills such as teamwork, leadership, and discipline. It can also provide a safe and positive environment for them to stay active and healthy. Therefore, finding a solution is of high importance going forward.

Goal

The goal of the project is to find more environment-friendly solutions for artificial turfs by researching an infill material that will reduce the emissions of microplastics from artificial pitches into the environment.

The goal is that this product can help clubs all over Europe to install more sustainable and environmentally friendly artificial turfs.

Both goals together are tackling 4 SDGs – 9, 11, 12 and 13. They want to create more sustainable infrastructure, community, production, and a clean environment.

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

SDG 12: Ensure sustainable consumption and production patterns

SDG 13: Take urgent action to combat climate change and its impacts

Scope

The Norwegian Football Association (NFF) is collaborating with the company GOE-production, the Kristiansand municipality, and the sports club Randesund IL to try out a completely new type of infill made from birch. Four pitches for 7vs7 are part of this trial project. One of them has the new infill, one has pure sand as infill, and the last two have rubber granules which now face the EU ban. This way the project compares the different materials during the season.

To find out if the product delivers a good performance, it is necessary to have good assessment and documentation. This is done through field tests performed by a FIFA-accredited laboratory, player feedback through an app and interviews, Life Cycle Analysis (LCA) performed by the Austrian Johannes Kepler University in Linz (EI-JKU) partner to the project and a leakage test of the material performed by the well-known Sintef in Norway.

How to reach the goals

User experiences are vital in any product development. At Sukkevann (pilot) the players are invited to share their experiences through an app. The players answer 15 questions, and the results will be used to further improve the product. The same app will be used on other types of courses to be able to compare different infill, during different conditions.

Product development is constant, and new versions are tested. However, field testing takes time, and it will not be known for sure if the product will be a success before it gets more usage and years of playing time.

When a new product proves successful in a system, a need to develop more artificial turf systems, such as carpets and layers for shock absorption (shock pads), to make a competitive market without a huge increase in prices is important.

Critical success factors

Football is now a year-round activity, meaning the pitches could be used for more than 2,500 hours a year. The pitch at Sukkevann is kept open throughout the winter and will provide useful experience on how the artificial grass surface works in winter. This is also to find out if the most critical maintenance with heavy machinery and snow ploughing damage the surface. Kristiansand is in the southern part of Norway, where the average temperature of any month is not below -1°C. Therefore, NFF is also working with clubs and municipalities in other parts of Norway, with harder weather conditions, to install this new infill for more trials.

Some key factors for developing a successful product and getting good usage of it:

- Field testing of the new products in different places with different climate zones.
- Finding which artificial turf systems the products work well in.
- Good documentation and maintenance are key for keeping a pitch in good condition throughout a lifespan.
- Good tenders that give good pitches are important if a successful product is going to be installed in successful systems with different manufacturers.

For all these factors it is important to have knowledge about artificial turfs, both within the federation, staff in clubs and communities.

Implementation and replication

ASSESSMENT TOOL

The first part of initiating a sustainable project for an organisation is to conduct an assessment. Based on the results of the assessment, organisations will know whether the work is being done correctly and where there is room for improvement. Example of the assessment tool for the implementation of the new ecological infills for the artificial turf systems:

Environmental Issue	Risk	Opportunity	Feasibility	Sustainability goals
Poor pitch quality	Injuries, players quitting	Make new and better systems for the players and the environment	It's difficult, but not impossible.	Fewer CO_2 emissions. Less plastic. New local business, which uses local sustainable material.
Poor maintenance	Injuries, players quitting	Make new and better pitch systems/ maintenance routines	Good maintenance is possible if the operating worker knows the system.	The longer life span of the artificial pitches.

GENERAL PRE-CONDITION

Pre-conditions for this project depend on the goal the organisation wants to achieve. If the goal is to research and develop a completely new product which is not commercially available, the pre-condition is to find project partners who are responsible for the financing of the research and development or procurement.

If the goal is to use alternative infills to microplastics, the pre-condition depends on how you look at it. Since there are organic infills in the market a procurement can be done today by making a tender that requires infill without microplastics. The pitch owner/municipality then takes all the risks.

In the NFF's pilot, the Norwegian Football Association looked at the research and development side and used an alternative that is not commercially available at the time. For a set-up similar to this pilot, the organisation needs a pitch to be installed by a municipality or a club, an interested club that is the main user of the pitch, a producer of alternative infill and involvement with resources from the national FA. To do a project like this, a producer willing to take the risk when it is possible to go commercial is needed. An interest in being involved in finding alternatives and the willingness to take the risk of doing it are the most important parts. The trigger is to be the frontrunner in evolving and testing new material.

STEPS OF THE IMPLEMENTATION

The implementation of the new ecological infills for the artificial turf systems requires **8 main steps** according to the pilot of the Norwegian Football Association (NFF). The NFF followed these steps during their execution of the pilot – finding greener alternatives to microplastics to be used as infill material for artificial football pitches:

Steps	Pre-condition // Requirement	Step // Action	Post - condition - outcome
1	Create A Sense of Urgency	The FA must gain an understanding, and start a dialogue around the importance of taking climate action within football and football facilities	More people engage because of knowledge and a sense that it is necessary to act.
2	Build A Guiding Team	Collaborative approach including club, player and expertise within climate and building process	The outcome is that every part affected by the change is taking part in the product.
3	Develop the vision	Make a similar vision when it comes to financing, design and how the practicality of the implementation can best be done.	This will lead to a faster process, fewer disagreements and misunderstandings.
4	Communicate the vision	Use websites, social media and have meetings with staff, players, and volunteers.	This will create awareness of the club's actions. It is important for the members to be a part of the whole process. This will lead to fewer disagreements and misunderstandings.
5	Solve/remove obstacles	There will always be obstacles. An obstacle can be anything. It can be the law, budget, people in the guiding team, government regulation or the building company. It is not possible to remove all obstacles, but it is important to recognize and handle them sensibly and fairly to make it easier to reach the goals.	There will often be obstacles. It is important to overcome them, if not it can be difficult to reach the end goal and all the previous work can be for nothing.
6	Creating short-term wins	Make small goals and celebrate them together. It can be everything from laying the first building stone, finishing drawings and deals, etc.	The feeling of mastery is important to maintain quality through the process and to recognize and become aware of the milestones and good work.
7	Consolidating Gains	The Team in charge needs to ask themselves and other stakeholders if they are heading in the right direction before it is too late. Make sure everyone affected by the project is on board. Are there different systems you should look at that the players like better or that are more environmental-friendly or that are easier to maintain? Are there other companies that should be involved? Are there more people the team should talk to?	• This will make sure that the process is thought through. A building process is flexible at the start of the project, but as long the project goes, the less flexible it becomes. • It is important to have people affected by the project onboard. Theoretically, 70% should be on board with the project for a smooth and successful implementation
8	Anchoring the change	Make a rapport about the whole process. Ensure the system works and that the players, staff, etc... are content with the changes and finished product. Also, as an example make sure brushing off the new infill becomes a part of the culture in the club.	• Make sure that the change is lasting and working for its purpose. • Make also sure that affected people understand the change and project itself. • Find out what worked and what did not. This information is valuable for the next implementation and product innovations.

SMART OBJECTIVES

For the completion of the project, it is necessary to understand and undertake various sub-tasks. The best way to implement and complete these sub-tasks is to create SMART goals from them. As the old saying by A.F. Morgenstern (1930) states: "Work SMARTer, not harder." The Norwegian Football Association completed the following **SMART steps** on their journey of discovering the ecological alternative to the rubber infill for the artificial pitches:

After the first pilot

S	**SPECIFICITY**
M	**MEASURABLE**
A	**ACHIEVABLE**
R	**REALISABLE/RELEVANT**
T	**TIME-BOUND**

S	Develop the infill
M	Produce a test batch to get lab-tested according to environmental requirements (EN 15330) and according to requirements related to football (FIFA tests)
A	Produce enough infill
R	Develop the machines to produce infill.
T	Before a tender is released to the marked

S	Player feedback to get the satisfaction of the players.
M	Reliable feedback from different age groups and gender throughout a whole year
A	Get data from a year of usage
R	Through a player feedback app
T	June 2023

S	Field testing over a longer period
M	Data from field tests show if the material and the system fulfil the requirements after usage and maintenance over a period of time.
A	Get data from the test institute
R	Through a test scheme
T	June 2023 and years forward

S	Find potential improvements after testing and player feedback.
M	Install a new pitch with improved infill
A	Construction of a new pitch with improved infill
R	Testing phases
T	After at least one year of testing

RESOURCES

Resources are key for the good completion of any project. The NFF distinguish 2 main types of human resources – **staff members, and key stakeholders.**

During the pilot, the required staff members of the NFF were:

Job title	Project Manager // Federation	Project Manager // Pitch Owner	Club	Supplier of infill	Contractor of artificial turf and shock pad
Description of action/ job	Find possible testbeds. Give input to the supplier of infill. Get feedback from players	Send out the tender. Maintain the pitch	Collect player feedback	Produce an alternative infill for the pilot	Work together with the supplier to deliver a system to the infill that makes the system fulfil the criteria for turfs
Specific skills (Soft and hard)	Stakeholder management	Knowledge of artificial turfs and tenders. Knowledge about maintenance.		Knowledge of production and the properties required	Knowledge of how the system could be developed

Key stakeholders required for the implementation of the NFF pilot project were:

Name	Role	Interest	Influence	Expectations	Communications requirements	Agreement
Goe-Production	Manufacturer of infill	The manufacturer of the organic infill made of birch to be tested	High importance since they are producing the infill	To produce infill and follow-up to upgrade it after user feedback and first seasons to make it more durable and improve the user satisfaction	Meeting and emails.	Contract for more pitches and research & development work. Follow-up of the pitches.
Municipality of Kristiansand	Pitch owner	Owner of the pitch where the infill is tested. Interested in the approach and to help find new alternatives	A municipality that is willing to take a risk is hugely important.	Provide knowledge from maintenance staff, users and clubs.	Emails, phone calls and occasional meetings	NFF for pad and Goe provides the infill They provide knowledge and help players to give feedback.

TRAINING

To successfully complete the pilot and achieve the goals, it is important to give various training workshops to the staff, volunteers and partners. This training should include proper maintenance of the pitch and how to keep it up to standard - to be presented to maintenance staff, how to read lab results and look for developments, and engaging with clubs that can give reliable player feedback throughout the first period with the ecological alternatives.

CONTROLLING AND MONITORING

Controlling and monitoring the progress is crucial to see if the project is going in the right direction. The player feedback is controlled and monitored by the football federation. Testing of the field and material properties is conducted by the FIFA-accredited laboratory. The Life Cycle Analysis is done by the accredited institute, in this case by Johannes Kepler University in Linz. Lastly, the leakage test is performed by the organisation Sintef in Norway. The monitoring methods and related documents of the NFF's pilot are in the annexes, "The NFF".

Summary of the evaluation

The goal of the project was to install and test a greener alternative to microplastics to be used as infill material for artificial football pitches. A pitch with a birch filler is installed and tested in Kristiansand, so the goal is reached. Field testing is the only way organisations can find out if the alternative solutions to rubber infill are suitable for different climates, usage, and maintenance. The durability of the product needs to be tested throughout the years.

At the testing stands nowadays, the NFF could give feedback on how the materials have behaved throughout the first years, but since a lifespan of a pitch is 10 years it is needed to follow the pitch over a longer period of time.

The of the project is the same as at the beginning of the project. However, further actions are being done even beyond the project's scope. The infill needs to be followed for a longer period of time to be certain that the solution is good for players and has good durability. It was reported that some properties have the potential for improvement. Product development is constant, and new versions are now going to be tested in more pitches and climate zones. Next to that, it is needed to be tested with multiple producers to see which producer develops the best possible product.

Co-operation with FA, municipality and supplier made a testbed ready on time. The supplier produced enough infill for a testbed. Next to that, user experiences are vital in any product development. The feedback from the users is positive: the infill doesn't get in hair, clothes or shoes, and the ball rebound and the ball roll are good.

Recommendations

The main recommendation from the Norwegian Football Association to grassroot clubs is to participate in this pilot because being a part of a test project can grow more knowledge around the club. For clubs at the highest league level, the recommendation is similar, except on the main pitch that has higher requirements throughout a season, because taking part in the testing affects every aspect of football and encourages change. According to NFF, other football associations should help new suppliers of materials in finding testbeds. To reach this stage it is needed that the product fulfils test criteria in the lab. Furthermore, being involved in the testing will make FAs more confident in helping clubs find the right products.

CHALLENGES

During the implementation of the pilot, the NFF faced various challenges. The NFF wants to point out a few of them for the potential organisations to learn from them.

1. Finding a pitch and municipality willing to take the risk of joining an R&D project was a challenge for the Norwegian FA. The NFF had multiple **meetings with municipalities** and ended up in Kristiansand after they showed their interest and were willing to test new alternatives together with the FA and supplier.
2. Another challenge was the production and delivery of the product. **The partners and the production of the infill needed to be punctual** because the pitch instalment takes time and time is very precious in this pilot.
3. Getting players' feedback is very important. Club provides players to give feedback. The NFF built an **app together with SportsLabs to get player feedback** and evaluate it.
4. One of the main question marks and also future challenges is the performance of the infill. The manufacturer had to follow up closely in the first months to **monitor the development of the project**. The infill height was slightly too high and after some time, field tests showed that the product could evolve with rounded edges for better test results regarding skin friction and rotational resistance.

Recommendations for policymakers

Testing new systems without rubber infill is going to be very important in the coming years. With an expected EU ban on the use of rubber infill in artificial pitches, finding and testing the alternatives has a huge priority nowadays. The FAs, through their position in football, get knowledge from new start-ups in their own countries and information from the bigger suppliers. Now, the situation is that there are no alternatives in use. The FAs, municipalities, clubs, and suppliers should look to collaborate through R&D projects to get infills tested before putting them on the market. The biggest manufacturers could be difficult to get on board because if the product is not working as expected, the commercial sales of the manufacturers could be affected.

It is important to realize that the testing of new infill materials takes time! From production and optimization to a product that can be installed at an acceptable cost takes years.

5

ENERGY EFFICIENCY AND ENERGY POVERTY

Scottish FA (SFA)

Introduction to project

The Scottish FA has seen a significant rise in the price of energy in Scotland, which directly impacts the energy costs at their clubs' facilities. Poor energy efficiency in football facilities and homes can make fuel bills unaffordable, resulting in fuel poverty. Energy efficiency has been designated a national priority by the Scottish Government.

Sustainability plays a key role in the design and management of community football facilities. The Scottish FA works with key Scottish Government partners to deliver education workshops and create resources to raise awareness of how to drive down running costs, access funding, and provide knowledge on how they can support their community to do the same.

Goal

The Scottish FA's goal is to tackle 6 SDGs – 1, 7, 10, 12, 13 and 17. The goal is to create an education framework to **support community football clubs** to raise awareness of energy efficiency at their facilities. In addition, the project also provides energy poverty learning opportunities to support local communities to reduce home energy bills.

Scope

Scotland has over 2,500 clubs, based in communities across the country. The project aims to deliver:

- **Energy efficiency** webinar with a focus on renovations and buildings to support clubs to become more energy efficient and consequently reduce their energy bills.
- Embark on an **energy poverty awareness campaign** created to support grassroots club members and their communities.

This is achieved through the delivery of in-person workshops and online webinars aimed at the Scottish FA's network of clubs, members of the community, as well as an online guide and social media campaign.

SDG 1: End poverty in all its forms everywhere.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

SDG 10: Reduce inequality within and among countries.

SDG 12: Ensure sustainable consumption and production patterns

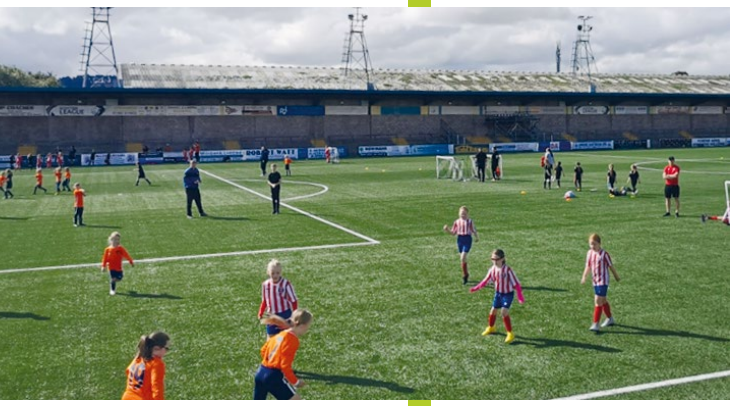
SDG 13: Take urgent action to combat climate change and its impacts

SDG 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

How to reach the goals

To achieve the goals of the project, it is necessary to take the following **actions:**

1. Develop partnerships with government-funded bodies e.g., Energy Saving Trust, Business Energy Scotland and Zero Waste Scotland.
2. Establish an agreement with Business Energy Scotland to provide clubs with the opportunity to access free energy audits.
3. Analyse results of energy audits to identify facility issues.
4. Determine club leaders' understanding of energy efficiency through a baseline survey.
5. Delivery of education workshops by key partners.
6. Evaluate the impact of the project through club feedback responses.
7. Develop a club sustainability document with key partners.



Critical success factors

Some of the key factors for ensuring the success of the project and its following usage:

- Identify and establish partnerships with key organisations that have the expertise and commitment to support the project.
- Ensure club specific energy efficiency information is provided to allow them to identify actions that meet their needs.
- Skilled staff with knowledge of grassroots football clubs, experience in planning and organising events and building relationships with key government agencies.
- Clear communication between stakeholders clarifies the group's motives, goals, and plan for the project. Implementation of formal meetings between stakeholders allows the project to be delivered with defined roles, responsibilities, and timelines.

Implementation and replication

The first part of initiating a sustainable project for an organisation is to conduct an assessment. The assessment tool will help the organisation to keep track of the work done and see if the project is going in the right direction and where improvements need to be done. The Scottish FA created an example of the assessment tool for their pilot – a campaign to increase the efficiency of sports' facilities and raise awareness of energy poverty, including training actions to reduce energy bills:

ASSESSMENT TOOL

The first part of initiating a sustainable project for an organisation is to conduct an assessment. The assessment tool will help the organisation to keep track of the work done and see if the project is going in the right direction and where improvements need to be done. The Scottish FA created an example of the assessment tool for their pilot – a campaign to increase the efficiency of sports' facilities and raise awareness of energy poverty, including training actions to reduce energy bills:

Environmental Issue	Risk	Opportunity	Feasibility	Business goals	Sustainability goals
High energy prices	The cost of running club facilities becomes unaffordable	Training actions and education to reduce energy bills	Feasible due to relationships with external organisations able to link with clubs and share expertise	Reduction in energy costs associated with running facilities	Clubs are able to apply more sustainable practices resulting in lower energy costs
Clubs unequipped or lacking in capacity to develop a sustainable approach	Clubs and workforce either lacking in knowledge/ awareness or capacity to be able to apply more sustainable methods	Awareness campaign delivered. Specific club staff members/ volunteers nominated and trained as "Green Champions"	Feasible due to relationships with external organisations able to link with clubs and share expertise and deliver training courses	Reduction in energy costs associated with running facilities and trained/ educated workforce	Clubs are able to apply more sustainable practices resulting in lower energy costs

GENERAL PRE-CONDITION

Through historical investment/support to clubs, the Scottish FA understands the club landscape in the country. From this, the Scottish FA has developed an understanding of clubs' strengths and weaknesses and is able to identify challenges that are faced both at an individual level and across the full club network. This, coupled with an understanding of general issues facing society relating to energy poverty and rising costs, allows for a targeted approach to providing support for issues facing clubs through education, club development, and support from external partners/key stakeholders.

STEPS OF THE IMPLEMENTATION

The implementation of the pilot of the Scottish FA requires **5 main steps.** The SFA followed these steps during the execution of their pilot – a campaign to increase the efficiency of sports' facilities and raise awareness of energy poverty, including training actions to reduce energy bills:

Steps	Pre-condition // Requirement	Step // Action	Post - condition - outcome
1	Identify key stakeholders who are trained as business energy efficiency experts.	Develop a partnership with key government agencies to discuss the rising operating cost of football facilities across the country. Raise concerns about the social, environmental, and economic impact this is having on individuals, clubs, and communities all over Scotland.	All stakeholders agree to work in partnership to support football clubs to operate efficiently, save money and help tackle climate change.
2	Identify the current energy efficiency status of football facilities in Scotland.	Create a partnership with Government Energy Advisors to provide free impartial advice for clubs. Starting with an energy audit.	Clubs have access to free energy assessments, designed to identify and analyse opportunities for reducing energy waste. These targeted evaluations will help football clubs understand their current energy use patterns and identify areas where they may be unnecessarily losing money on inefficient buildings, equipment, or appliances.
3	Create an education programme to support club leaders to make sustainable changes to their facility	Work with stakeholders to deliver energy efficiency and energy poverty workshops providing impartial support and access to funding to help grassroots and member clubs save energy, carbon, and money.	Energy experts create a bespoke energy efficiency workshop to support the needs of football clubs across Scotland.
4	Project Management	Implement regular meetings with stakeholders to agree on the program content, timelines, roles, and responsibilities.	Workshops delivered within timescales
5	Evaluation	All workshops are to be evaluated by club leaders to identify any gaps in content delivery.	Workshops reviewed and updated to meet the needs of the learners. Follow up with individual club leaders when required.




SMART OBJECTIVES

During the pilot, various tasks, activities, and sub-goals were undertaken in order to achieve the goals. The Scottish FA used the SMART technique for their main sub-goals to have a clear overview of the objectives. They worked out these SMART sub-goals for the completion of this pilot:

S	**SPECIFICITY**
M	**MEASURABLE**
A	**ACHIEVABLE**
R	**REALISABLE/RELEVANT**
T	**TIME-BOUND**

S	Gain an understanding of specific issues facing clubs relating to energy poverty
M	Overview and examples of specific issues
A	Survey clubs and knowledge of club network
R	Consult directly with clubs and Scottish FA staff
T	June 2022

S	Create partnerships with experts in the field
M	Agreed goals and outcomes to be achieved through partnership
A	Agreement between the Scottish FA, expert partners and clubs
R	Make contact with expert partners and define plans for the delivery of workshops
T	December 2022

S	Deliver workshops and assess the effectiveness
M	Overview of effectiveness of workshops and awareness campaign
A	Survey to clubs and workshop evaluation
R	Evaluation from clubs following workshops
T	March 2023

RESOURCES

Besides the financial resources, human resources are a very important aspect of the successful completion of the Scottish FA's pilot.

The 2 most important roles in the internal project team are **project manager and operations manager.**

Working with **external parties** is a necessity in this pilot. Every organisation needs to find the most relevant stakeholders for their replication of this pilot. Scottish FA distinguished the most relevant stakeholders connected to their project:

Job title	Project Manager // Federation	Project Manager // Pitch Owner
Description of action/job	Creation of partnerships and networking with clubs/relevant organisations	Development of a programme of support for clubs and evaluation of the effectiveness
Specific skills (Soft and hard)	Time management, communication skills and patience to talk with volunteers, etc., network with clubs	Knowledge of energy poverty and challenges facing clubs, understanding of club landscape and strengths/ weaknesses of individual clubs

Name	Role	Interest	Influence	Expectations	Communication requirements	Agreement
Business Energy Scotland/ Home Energy Scotland	Business Energy Scotland is funded by the Scottish Government to provide free, impartial support and access to funding to help small and medium-sized enterprises save energy, carbon, and money.	Key delivery partners offering face-to-face and online support for clubs	Expert partner in the relevant field	To support the delivery of in-person and online workshops to the Scottish FA club network. To support the development of an online guide	Communicate with the Scottish FA via email and meetings and be the point of contact for clubs	Support the design of the sustainability guide. Deliver club workshops and Green Champions training. Act as point of contact for clubs.
Energy saving trust	Energy Saving Trust is an independent organisation – working to address the climate emergency, and therefore an expert partner in this area	Key delivery partners offering face-to-face and online support for clubs	Expert partner in the relevant field	To support the delivery of in-person and online workshops to the Scottish FA club network To support the development of an online guide	Communicate with the Scottish FA via email and meetings and be the point of contact for clubs	Support the design of the sustainability guide. Deliver club workshops and Green Champions training. Act as point of contact for clubs.
Members and grassroots clubs	Clubs who will benefit from the support offered by partners and will provide support to the community upon attending workshops and training	The target for workshops, benefitting from education from expert partners. Additionally, specific clubs will be selected to take learning from workshops and deliver to their community	Will be able to share the best practice and learnings to the community and other clubs having attended workshops and webinars	To attend workshops, and specific clubs will be selected to deliver learning to their communities after attending workshops	Email communication and attendance at workshops and webinars	Provide information on current issues they face. Attend workshops and webinars. Nominate a "Green Champion" to attend training.

TRAINING

Training workshops for the staff members are an important part of this pilot. The workshops will teach staff members about energy efficiency, how it relates to energy poverty and the challenges that clubs are facing. It is important to understand the club landscape and the strengths/weaknesses of individual clubs. Furthermore, the training workshops should consist of information about the external groups and experts operating in the field of sustainability and the content of workshops/ guides they created.

CONTROLLING AND MONITORING

Controlling and monitoring the progress is very important to see if the project is on the right way to achieve its goals. The collection of data and analysing of the impact of the energy efficiency workshops and webinars is performed by the Scottish Football Association (SFA) and the delivery partners. The monitoring methods and related documents of the SFA's pilot are in the annexes, "The SFA".

Summary of the evaluation

The goal of the project was to provide clubs with education and guidance around sustainable practices with a view to lowering energy costs attached to the running of their clubs and facilities. This was achieved through the creation of partnerships with expert organisations in the field, the delivery of in-person and online workshops, and the creation of an online guide aimed at providing support for clubs to tackle rising energy costs.

The scope of the project remained the same, focussing on clubs that are facing issues related to rising energy costs and who are therefore able to pass this learning on to communities.

Having developed a knowledge of the specific issues facing clubs, the Scottish FA worked with expert partners to create and deliver workshops and webinars targeting these specific issues and providing education to manage these. Agreements were reached with external partners and there was constant communication throughout the planning stages to ensure outcomes were met.

Recommendations

In addition to a knowledge of the club landscape and specific issues facing clubs relating to energy poverty, the main recommendation from the Scottish Football Association to other football associations that want to recreate this pilot is to identify the leading expert organisations in the field and create strong partnerships. It is also key to establish timeframes and keep in communication in order to identify any situations that would result in a change in these timelines.

CHALLENGES

Furthermore, the Scottish FA faced various challenges during their implementation of the pilot.

1. At the national level, clubs were facing the challenge of rising energy costs which had a huge economic impact on their everyday operations. The Scottish FA delivered **multiple workshops and webinars** to tackle this problem. Moreover, the creation of a **sustainable guide helped to raise awareness about energy poverty.**

2. Another challenge was that the clubs were unsure of where to find support and guidance. The Scottish FA with its broad network was able to help clubs with finding and **establishing links to the right experts and partners.**

3. The capacity and priorities of partner organisations were other challenges faced by the Scottish FA. The SFA would recommend **putting agreements** in place **between the partners.** Next to that, **establishing timelines with constant communication** is necessary to keep every partner up to date.

Recommendations for policymakers

Energy poverty and the requirement for more sustainable practices are of increasing importance. With football clubs being at the heart of their communities, these clubs have a key role to play not only in developing sustainable methods for running their organisations and facilities, but also in supporting the community that they represent. One of the main findings to come out of discussions with clubs was that although they were aware that support was available to them, they were unsure of how to access this. Therefore, a key aspect of this pilot was creating lines of communication between clubs and experts in the field of business and home energy. The key role that the football association must play is to develop a clear understanding of the challenges that clubs face, an awareness of government priorities, and a strong knowledge of external agencies and organisations that can offer support. Once relationships are established between these experts and clubs, the support available to clubs will increase which will in turn have a beneficial impact on the wider communities.

6

PV SOLAR PANEL

Portuguese FA (FPF)

Introduction to project

With the raising electricity costs all around Europe, S.L. Benfica decided to invest in a renewable source of energy at their training centre to analyse the photovoltaics potential and feasibility on sports facilities.

PV systems convert solar radiation into electricity. The electricity generated can be used to meet the training centre's own energy consumption requirements or, in certain situations, fed back into the electrical grid.

Goal

The main goal of the Portuguese FA is the installation of PV panels due to the increase in energy costs over the last two years. Furthermore, with the topic of PV panel installations, 4 SDGs are tackled by FPF, including Goal 7 (Affordable and clean energy), Goal 11 (Sustainable cities and communities), Goal 12 (Responsible consumption and production), and Goal 13 (Climate Action).

Scope

The Portuguese Football Federation (FPF) is collaborating with the external PV panel provider in this project. The scope of this project is to understand the viability and impact of the installation of PV solar panels in a football training centre in Portugal. Furthermore, the Portuguese FA wants to create awareness about the energy efficiency in football for their partner clubs and players.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

SDG 12: Ensure sustainable consumption and production patterns

SDG 13: Take urgent action to combat climate change and its impacts

How to reach the goals

To reach the Portuguese pilot's goals it is needed to realize and undertake these important actions:

- Communicate with the external expert on the PV solar panels
- Analyse the feasibility of the project – research the available area and the number of panels to be installed
- Collect all the data from the PV solar panels
- Analyse the collected data

Critical success factors

To ensure the success of the pilot, the Portuguese FA stated some of the key factors:

- Identify and make use of the external expert company on the PV solar panels.
- Research the climate conditions of the specific location for the PV panels installation.
- Be aware of the maintenance of the PV systems and challenges and technical issues which may arise.
- Energy crisis – huge energy price fluctuations could impact the break-even of the project.

Implementation and replication

ASSESSMENT TOOL

The first step in the initiation of a sustainable project for an organisation is to conduct an assessment. The assessment tool will help the organisation to keep track of the work done and see if the project is going in the right direction and where improvements need to be done. The Portuguese FA created an example of the assessment tool for their pilot – installation of the PV solar panels:

Environmental Issue	Risk	Opportunity	Feasibility	Business goals	Sustainability goals
Using non-renewable electric energy.	Production of CO_2.	Production of renewable energy.	Available space on rooftops for the installation of PV.	Return on investment.	100% sustainable.

The other potential risks connected to PV solar panels could be performance, financial, regulatory and aesthetic risks.

- The **performance** of a photovoltaic system can be affected by factors such as weather, shading, and maintenance. If the system does not perform as expected, it can lead to reduced energy output and financial losses.
- Photovoltaic projects can be **financially** expensive to install and maintain, and their financial viability can be affected by changes in government policies, energy prices, and other economic factors.
- There may be **regulatory** requirements that need to be met before installing a photovoltaic system, such as building codes, zoning laws, and environmental regulations.
- Some people may consider the installation of solar panels to be unsightly, which could impact the **aesthetics** of the sports facility and potentially deter visitors or negatively affect the facility's reputation.

GENERAL PRE-CONDITIONS

Before starting the project there need to be a few key questions raised in order to be successful with the implementation of the PV solar panels:

- What is the primary goal?
  - Is it to leverage the PV solar system as a community engagement platform?
  - Or do you want the PV solar system to be the primary energy generator for the facility?
- How much energy does the system need to produce during a certain period of time?
- Other questions concerning the size and location, connectivity, financing, and data monitoring should be answered.

Another pre-condition for the implementation of PV solar panels might be official licenses from the appropriate organisations. The authorizations could differ per geographical region, which is why it is hard to say what exactly is needed. However, for the Portuguese FA, it was required to have an exploration license requested from the General Directorate of Energy.

STEPS OF THE IMPLEMENTATION

The implementation of the pilot of the Portuguese Football Federation (FPF) requires **6 main steps.** The FPF followed these steps during the execution of their pilot – a feasibility study to evaluate the costs, return and other social and economic impacts of installing PV solar panels in sports' facilities:

Steps	Pre-condition // Requirement	Step // Action	Post - condition - outcome
1	Energy consumption and each financial impact / per year.	To break down monthly invoices throughout the year.	To see the overall energy consumption per year. Have a better understanding of how much energy is required from PV solar panels.
2	Areas available for installing solar panels.	To evaluate the feasibility of installing a photovoltaic panel system on the available roofs.	
3	Development of a viable solution.	To conduct a feasibility study with an external consultant.	Design project of PV installation.
4	Financial resources.	To evaluate financial conditions for the investment.	
5	Installation of the solution that best suits the infrastructure.	To arrange a supplier for the project.	Installation of the PV panels.
6	Suitable climate conditions.	Monitoring and reporting.	Study of the implemented solution.

SMART OBJECTIVES

For the successful implementation and execution of the pilot, the Portuguese FA decided to create a SMART goal. This SMART goal creates a clear overview and understanding of their goal to install the PV solar panels at the sports facility:

S	**SPECIFICITY**	Develop a solar panel exploitation becoming self-energy autonomous.
M	**MEASURABLE**	Check the mensal report of PV energy production installation.
A	**ACHIEVABLE**	Develop strategic partnerships to get more expertise.
R	**REALISABLE/RELEVANT**	Contract an energy supplier to participate in the project.
T	**TIME-BOUND**	The breakeven of this project is the second half of 2026.

RESOURCES

Resources are crucial for the implementation of the FPF's pilot. The Portuguese FA pointed out the 2 most important human resources groups – the **internal project team members and external stakeholders.** The table below shows the main role of the internal project team members.

Job title	Project Manager	Operations Manager	Facility Manager	Supplier
Description of action/ job	Development of the project together with the supplier	Person in charge of communication between the different parties; accompanies the installation of the PV; Data collection	Guarantee the good operation of the installation	Sharing "expertise" and installing the designed solution

For the **external stakeholders,** the FPF distinguished one main stakeholder – the solar panel provider.

Name	Role	Interest	Influence	Expectations	Communications requirements	Agreement
Solar panel provider	Develop the design solution and the financial investment exhaustive study.	They have the expertise for the implementation of the solution.	High. Knowledgeable about PV solar panels.	Conduct the study as close as possible to reality.	Meetings and by email.	Formal signed agreement.

TRAINING

The Portuguese FA divided the necessary training workshops for their staff members into 2 parts. Training for the **maintenance teams** and training for the **facility manager.** The maintenance teams need to have dedicated workshops and training to be able to perform their work without unwanted problems. The facility manager needs to have training on how to evaluate the available data to see the outcomes of the project.

The FPF decided to use an external maintenance team to carry out the daily control and monitoring. The maintenance team belongs to the same supplier which was responsible for installing the PV system. Furthermore, half-yearly maintenance is also carried out on the entire system, also by the same supplier.

CONTROLLING AND MONITORING

Controlling and monitoring the progress is crucial to see if the project is going in the right direction. The collection of data and analysing of the impact of the PV solar panels is performed by the Portuguese Football Federation (FPF) and the supplier of the PV solar panels. The monitoring methods and related documents of the FPF's pilot are in the annexes, "The FPF".

Summary of the evaluation

The project's goal was to install and monitor PV panels due to the increase in energy costs over the last two years. This was achieved with the help of the external partner – a PV solar panel provider and the analysis made with the help of the Energy Institute at Johannes Kepler University.

The scope of the project remained the same, focussing on understanding the viability and impact of the installation of PV solar panels in a football training centre in Portugal. As well as the collaboration with the mentioned external PV solar panel provider.

During the pilot, the Portuguese FA found interesting results on the climate conditions in the area of PV solar panels. The results showed that the sun exposition during days varied from the previous estimation. Furthermore, due to the high energy price fluctuations, the break-even of the project is expected to be sooner than the estimation before the project.

Recommendations

The Portuguese Football Federation's recommendation for the clubs and FAs is to follow a few key points to succeed in installing the PV solar panels:

1. Focus on productivity rather than the capacity of the system.
2. Make friends with your utility to find solutions for lowering costs.
3. Get creative with your financial model. Find the right combination of options to lower the total capital cost and minimize the system's payback period. Think about more than tax incentives, loans and grants in your financial model. Consider options that can create win-win partnerships with corporate sponsors that are interested in reaching fans.
4. Most importantly, engage with your community. Use the PV system as a tool to educate and engage your community through tours of the stadium, on-site educational programs or partnerships with school programs.

CHALLENGES

There are several challenges that can arise when installing photovoltaic (PV) systems at sports facilities. Here are some common challenges and potential solutions:

1. Sports facilities often have limited space for solar panels, as the area may be used for other purposes. One potential solution is to **install rooftop solar panels,** which can be an efficient use of space.
2. The structure of the sports facility may not be able to support the weight of solar panels. Before installing solar panels, it's important to **assess the structural integrity of the building and make any necessary upgrades.**
3. Sports facilities often have strict aesthetic requirements, and solar panels may not fit the design or style of the facility. One solution is to **work with an architect or designer to integrate the solar panels into the overall design of the facility.**
4. The cost of installing solar panels can be high, and sports facilities may not have the budget to cover the upfront costs. The solution could be to **explore financing options,** such as **leasing or power purchase agreements,** which can allow the facility to pay for the solar panels over time.
5. There may be regulatory requirements that need to be met before installing a PV system. One solution is to **work with a solar installation company that has experience navigating these requirements** and can help ensure compliance.
6. Solar panels require ongoing maintenance and monitoring to ensure optimal performance. The solution is to **work with a solar installation company that offers ongoing maintenance and monitoring services** to keep the system operating at peak efficiency.

Overall, by carefully assessing the challenges and working with experienced professionals, it's possible to successfully install and operate a PV system at a sports facility.

Recommendations for policymakers

As a starting point, it is recommended to conduct an **energy audit** because it measures the current energy load and therefore facilitates scoping a potential on-site project in relation to the system goals. Contact your local energy provider for information on free or low-cost energy audit services available in your area. Your local utility, so the company which is providing the electricity at your facility is an important partner to build a cost-effective project.

For the planning, determine the outcomes you wish to achieve because of the installation, e.g., if the primary goal is to engage fans in your commitment to sustainability, make sure that the system is visible to the fans.

When installing **PV solar panels, it is necessary to consider PVs as an integral part of the energy strategy of a building.** Appearance and aesthetics are essential. Shading by other buildings (or other elements) needs to be minimized to use the full potential of the solar panels. There should be a good match between the energy demand pattern of the building and the available energy from the PV system. Adequate ventilation of the PV modules is essential to lower temperatures which maintain good performance. Consider the variety of architectural options for successfully integrating PV systems into buildings and, in particular, into roof and façade systems. Because PV systems can influence the orientation, the façade, the footprint and the section of buildings.

The tip is to use PV system providers because most of them will perform a site survey and feasibility study for reasonable costs.

7

Annexes

The NFF

EVALUATION FORMS NFF

In Norway, there are requirements for doing a **field test** after installing a pitch. This test is therefore included by the producers when they give a price for the instalment. The goal is to test the material properties and test the field recording to the standardized test methods. For a field test, you can choose between different FIFA-accredited labs. The full list of accredited test institutes can be found via this link.

Lab leakage tests were performed by Sintef Norway. The goal was to learn that the product doesn't have any heavy metals affecting the pitch surrounding it. For more information contact Sintef Norway: info@sintef.no

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Life Cycle Analysis is an expert method, that requires partners and practitioners with significant experience. In practice, it is more likely that approval organizations, manufacturers, and associations will subject new systems and materials to a one-time study of this kind. To replicate or get informed about the Life Cycle Analysis performed by the Lab institute at Johannes Kepler University for the NFF's pilot, it is recommended to contact them via this email: office@energieinstitut-linz.at. For more information visit the sustainability website of UEFA.

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The goal of the **Player's Feedback form** is to collect feedback from the players. The players give their perception of how the field felt on the current date with the birch infill. The NFF created a feedback app "NFF Pitch Rater" to collect this feedback from players. The template with questions from the app is shown below:

TEMPLATE "PLAYER FEEDBACK FORM QUESTIONNAIRE"

Questions (Q)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Norwegian questions	Hvilken bane?	Er dette din hjemmebane	Din alder?	Vekt?	Ditt kjønn?	Anledning for besøket?	Dato for besøket?	Hvordan var baneforholdene?
English questions	Which pitch/ field?	Is this your home pitch/field?	Your age?	Your weight? (kg)	Your gender?	Reason for your stay?	Date of the visit?	What was the surface of the field?
Answers	**Q1 (drop down)**	**Q2 (points)**	**Q3 (points)**	**Q4 (points)**	**Q5 (points)**	**Q6 (points)**	**Q7**	**Q8 (points)**
	Sukkevann T1	Ja	Under 13	Under 18 år	Mann	Trening	Dato fra kalender	Tørr
	Sukkevann T2	Nei	13-14	50-60 kg	Kvinne	Kamp, vant		Våt
	Sukkevann T3		14-16	60-70 kg	Annet	Kamp, uavgjort		Fryst
	Sukkevann T4		16-18	70-80 kg		Kamp, tapte		
	Kringsjå		18+	80-90 kg				
				Over 90 kg				
				Ønsker ikke å oppgi				
			If the answer "under 13 years", jump right to Q15 (regarding experience on the pitch)					

Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Hvilken skotype brukte du?	Hvordan kjentes banen kontra andre kunstgressbaner du har spilt på?	Hvordan opplevdes banen ved raske retningsforandringer?	Fikk du brannsår eller skrubbsår?	Rullet ballen fort eller sakte når du slo en pasning?	Hvordan spratt ballen sammenlignet med andre kunstgressbaner?	Hvordan var opplevelsen av banen på en skala fra 1 til 5, hvor 1 er veldig dårlig og 5 er veldig bra?	Andre kommentarer?
What kind of shoes did you wear?	How did the pitch feel vs. Other AF turfs you've played on?	How was the field experienced during rapid changes of direction?	Did you get burns or abrasions?	Did the ball roll fast or slow when hitting a pass?	How did the ball bounce compared to other AF turfs you've played on?	How was the experience of the pitch on a scale from 1-5 where 1 is very bad and 5 is very good	Other comments?
Q9 (points)	**Q10 (points)**	**Q11 (points)**	**Q12 (points)**	**Q13 (points)**	**Q14 (points**	**Q15 (numbers along line)**	**Q16 (textbox)**
Joggesko	Myk	Glatt	Ingen	Raskt	Lavere	1	
TF (grussko, turf field)	Normal	Normal	Litt rød	Normalt	Normalt	2	
AG (kunstgressko)	Hard	Godt feste	Blødende	Sakte	Høyere	3	
FG/AG (store knotter Adidas/ Puma/Mizuno)						4	
FG (naturgress)						5	

The goal of this video is to show a practical guideline to avoid microplastic from artificial turf in football. The video can be accessed via this link.

The SFA

EVALUATION FORMS SFA

The goal of the **Mentimeter Survey questionnaire** for the Scottish FA and delivery partners is to receive information about respondents' own understanding before the workshop and after the workshop and teach clubs about energy efficiency. To replicate this method, it is necessary to design a questionnaire, for example via Mentimeter because it allows attendees to answer survey questions using their smartphones during the workshop presentation. It is recommended to create pre and post-workshop questions to see and evaluate the effectiveness of the workshop, identify any gaps in knowledge, and highlight the next steps to allow continuous engagement and learning. SFA recommend showing the answers on the screen because attendees gain an understanding of other clubs' knowledge/issues/needs. This allowed the delivery partners to give information specific to those in attendance. The template with questions from the Mentimeter Survey is shown below:

TEMPLATE "MENTIMETER SURVEY QUESTIONS"

Pre-Workshop Survey	Post-Workshop Survey
Business Energy Scotland	**Business Energy Scotland**
Please rate your understanding of what energy efficiency is/means *(Traffic light rating to be used)*	Please rate your understanding of what energy efficiency is/means *(Traffic light rating to be used)*
Can you identify ways to make your facility more energy efficient to save on bills and the environment? *(open ended question)*	Can you identify ways to make your facility more energy efficient to save on bills and the environment? *(open ended question)*
Are you aware of how to access funding to support energy efficiency improvements at your facility? *(open ended question)*	Are you aware of how to access funding to support energy efficiency improvements at your facility? *(open ended question)*
Home Energy Scotland	**Home Energy Scotland**
Please rate your understanding of what advice and support is available for households across Scotland *(Traffic light rating to be used)*	Please rate your understanding of what advice and support is available for households across Scotland *(Traffic light rating to be used)*
Had you heard of Home Energy Scotland before this event? *(Yes/No)*	Please rate your understanding of what support Home Energy Scotland can provide your clubs to engage with your staff, communities and supporters *(Traffic light rating to be used)*
Please rate your understanding of what support Home Energy Scotland can provide your clubs to engage with your staff, communities and supporters *(Traffic light rating to be used)*	**General**
	Would you be interested in getting in touch with Business Energy Scotland or Home Energy Scotland to support your club *(open ended question)*

The goal of this video is to show a **practical guideline for Energy Efficiency in football.** The video can be accessed via this link.

The FPF

EVALUATION FORMS FPF

The goal of this template is to compare the data collection results. To estimate the economic efficiency of photovoltaic plants. This template tool is available online and can be downloaded via this link.

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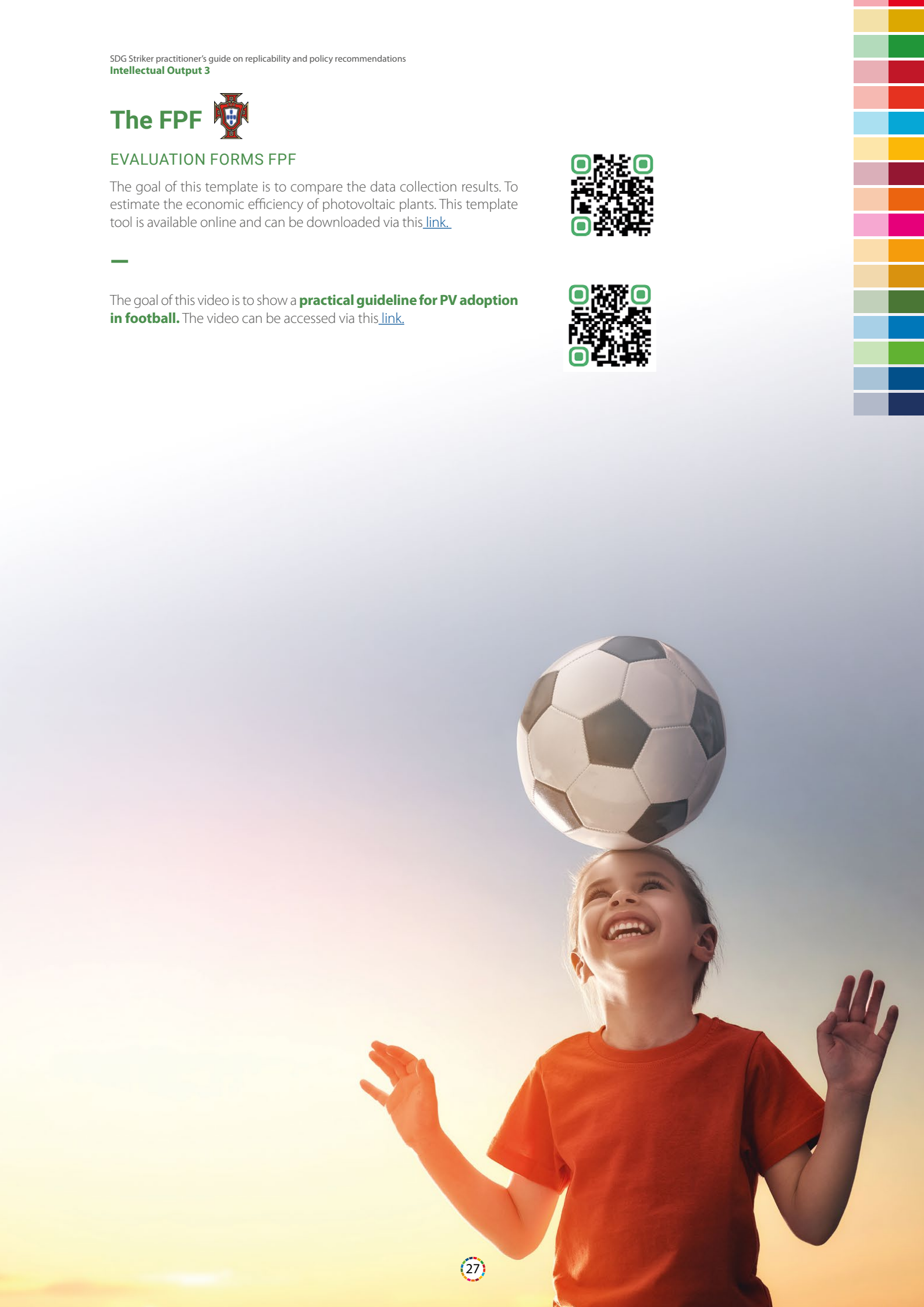
The goal of this video is to show a **practical guideline for PV adoption in football.** The video can be accessed via this link.



SDG Striker
Scoring Goals for Sustainability

SDG Striker practitioner's guide on replicability and policy recommendations

Intellectual Output 3

Co-funded by the Erasmus+ Programme of the European Union

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ANNEXES SDG STRIKER PRACTITIONER'S GUIDE

SURVEY ECOLOGICAL INFILLS FOR ARTIFICIAL PITCHES, from Norwegian FA (NFF):

The following survey was shared with the players of the pilot area to evaluate the different pitches based on users' experience. This survey was originally shared in Norwegian.

Q1: Which pitch/field?

Q2: Is this your home pitch/field?

Q3: Your age?

Q4: Your weight? (kg)

Q5: Your gender?

Q6: Reason for your stay?

Q7: Date of the visit?

Q8: What was the surface of the field?

Q9: What kind of shoes did you wear?

Q10: How did the pitch feel vs. Other AF turfs you've played on?

Q11: How was the field experienced during rapid changes of direction?

Q12: Did you get burns or abrasions?

Q13: Did the ball roll fast or slow when hitting a pass?

- *If the answer "under 13 years", jump right to Q15 (regarding experience on the pitch)*

Q14: How did the ball bounce compared to other AF turfs you've played on?

Q15: How was the experience of the pitch on a scale from 1-5 where 1 is very bad and 5 is very good.

Q16: Other comments?

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SURVEY ENERGY EFFICIENCY AND ENERGY POVERTY, from Scottish FA (SFA):

This questionnaire/evaluation was used as part of the second MSE. This was done using mentimeter to get a general perception of participants regarding energy-related aspects.

Q1: Prior to attending this workshop, how would you rate your understanding of what energy efficiency is/means?

- Didn't understand it at all
- Not completely sure
- Understood it well

Q2: Now that you have attended this workshop, how would you rate your understanding of what energy efficiency is/means?

- Don't understand it at all
- Not completely sure
- Understand it well

Q3: Can you identify ways to make your household more energy efficient to save on bills and the environment?

Q4: Having attended this workshop, do you know how to access support for energy efficiency improvements in your household?

Q5: Please rate your understanding of what advice and support is available for households.

- Don't understand it at all
- Not completely sure
- Understand it well

Q6: Had you heard of Home Energy Scotland before this event?

- Yes
- No

Q7: Please list any areas that you would like further advice/support on regarding energy efficiency in your home.

SCOTTISH FA MULTIPLIER SPORT EVENT AGENDAS:

Examples of the agendas that were used by the Scottish FA for each of the MSEs.

MSE 1 – Energy Efficiency Club Workshop Agenda:

- Introduction and pre-workshop survey
- Business Energy Scotland Presentation
- Home Energy Scotland Presentation
- Post-workshop survey
- Scottish FA Grassroots Pitch and Facilities Fund
- Networking and lunch

MSE 2 – Home Energy Scotland Community Workshop Agenda:

- Scottish FA Introduction
- Overview of SDG Striker Programme and Intellectual Outputs
- Home Energy Scotland Workshop
- Post Workshop Survey

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TRAINING CENTER 'BENFICA CAMPUS' SPECIFICATIONS Portuguese FA (FPF)

The following tables provide some of the technical and economic details of Benfica Campus and the PV installation.

CLIENT	Sport Lisboa e Benfica - Futebol, SAD				
CONSUMPTION	• Annual energy cost: 307 915 € • Consumption annual energy: 3 290 MWh • Contracted power: 930 kVA • Voltage Level: MT				
TARIFFS	**€ / kWh**	**PONTA**	**CHEIAS**	**VAZIO**	**SUPERVAZIO**
	Active Energy	0,0614	0,0589	0,0488	0,048

SOLAR PANELS' SPECIFICATIONS, Portuguese FA (FPF)

POWER TO INSTALL	221 kWp | 200 kWn
SPECIFIC PRODUCTION	1 429 kWh / kWp
MODULES	650 units | 340 Wp
TECNOLOGY	Mono PERC
LOCAL	Roof and Carpark
INCLINATION	5º | 7º

ECONOMIC PROPOSAL, Portuguese FA (FPF)

ANNUAL PRODUCTION	315 MWh
PHOTOVOLTAIC POWER STATION UPAC (221 kWp)	194 000 €
EFFECTIVE SAVINGS / YEAR	35 299 €
PAYBACK	5,5 years

DATA COLLECTION AFTER PHOTOVOLTAIC PANELS INSTALLATION, Portuguese FA (FPF)

The following tables, showcase the energy production, total consumption, and savings both from an economical and an environmental perspective, highlight the months that provide better results.

FEDERAÇÃO PORTUGUESA DE FUTEBOL

Year	Month	Photovoltaic UPAC Production [kWh]	Total Consumption [kWh]	Effective Savings	Total EUROS
2022	01	8 693,00	243 614,00	3,57%	2 112,38 €
2022	02	9 758,00	210 694,00	4,63%	2 371,18 €
2022	03	10 729,00	225 574,00	4,76%	2 607,13 €
2022	04	16 618,00	191 720,00	8,67%	4 038,14 €
2022	05	18 541,00	228 891,00	8,10%	4 505,43 €
2022	06	16 923,00	208 829,00	8,10%	4 112,26 €
2022	07	18 783,00	266 473,00	7,05%	4 564,24 €
2022	08	16 456,00	267 203,00	6,16%	3 998,78 €
2022	09	14 052,00	252 208,00	5,57%	3 414,61 €
2022	10	10 327,00	257 601,00	4,01%	2 509,44 €
2022	11	7 311,00	240 307,00	3,04%	1 776,56 €
2022	12	5 063,00	245 350,00	2,06%	1 230,30 €
				TOTAL	**37 240,45 €**

Year	Month	Photovoltaic UPAC Production [kWh]	Avoided CO2 Emissions (kgCO2eq)	Equivalent absorption in trees
2022	01	8 693,00	2 173,25	99
2022	02	9 758,00	2 439,50	111
2022	03	10 729,00	2 682,25	122
2022	04	16 618,00	4 154,50	189
2022	05	18 541,00	4 635,25	211
2022	06	16 923,00	4 230,75	192
2022	07	18 783,00	4 695,75	213
2022	08	16 456,00	4 114,00	187
2022	09	14 052,00	3 513,00	160
2022	10	10 327,00	2 581,75	117
2022	11	7 311,00	1 827,75	83
2022	12	5 063,00	1 265,75	58
		TOTAL	**38 313,50**	**1 742**

Conversion factor: Electricity - 0,25 KGCO_2e/KWh; Absorption – 22kgCO_2/tree