

PROJECT RURES

D.T2.2.4 Pilot action report - Report of PA 3 to
test E-Tree to increase awareness of EE and
RES in Pomurje region

December, 2018





1. Introduction

Project index number and acronym	CE933 RURES
Responsible partner (PP name and number)	Local Energy Agency Pomurje (PP12)
Project website	http://www.interreg-central.eu/RURES
Pilot action number and title	I3 - Solar “E-Tree”
Pilot action location	<p>Puconci 178, 9201 Puconci, Slovenia</p> <p>Location: parcel number 1988, cadastral municipality - Puconci</p> <p>The types of buildings built on the land: public road and bus station (partly)</p>
Delivery date	31.12.2018

2. General information on the pilot action

The Solar E-Tree is installed on the property / land owned by Municipality of Puconci. With the location around the Puconci elementary school, the Green hall (energy-saving sports gym), the bus station, the outdoor sports grounds, the park and the church, the frequent location of E-Tree has been reached. The location was determined within the framework of the meetings with the Local Support Group (LSG) and the mayor of the municipality of Puconci.

PI Solar E-Tree is constructed from 3 components: **Solar Tree, Solar bench and Smart bench with shadow**. All together they provide 11 pieces of solar cells, capacity of 1,74 kWp, 16 seats for visitors (benches), LED lightning 20 W, 16 USB ports for charging different mobile devices, one wireless charger, ready for use charging station installed on the bench for e-bike, e-roller, e-cycle 2 x 220 V (300 W), sensors for temperature, humidity and 100 % Solar powered charging independent of grid supply.

- **Solar tree** supports working of portable computers, mobile phones and has LED lights that are working at night, solar panels have a huge capacity, it has resistant steel structure and electrical equipment is installed inside the box. Solar tree has a regulator, battery and converter installed for operation.
- **Solar bench (smart bench)** is made of galvanized steel, which makes the solar bench firmly and resistant to vandalism and natural conditions (salt). On the middle part of the bench are solar panels that supply electricity with USB ports for charging mobile devices. Installation and construction is very quick and easy.
- **Smart bench with shadow** has 6 seats, connected USB cables for users, has LED lightning and sensors for temperature, humidity. Its steel construction is very resistant, while all electrical equipment is



installed inside the box. All constructions are well designed and performed with good quality materials. That makes the investment looks good and durable.

When installing Solar E-Tree is estimated that energy produced will be 1.870 kWh annually. In 30 year, the Solar E-Tree will generate 56,1 MWh of pure electricity. At the annual level, with energy production from Solar E-Tree we will save 1.041 kgCO₂ (1,04 t CO₂ compared to purchasing this energy). During the lifetime of 30 years, the Solar E-Tree will save 31,27 tCO₂.¹

Investment costs:

According to the last approved Application form of the RURES project, total value of this investment was foreseen at 20.000,00 EUR, but actually investment costs was in total: 19.945,83 € excluding value added tax.

This value consists of the following two components:

- Solar E-Tree: 18.450,00 EUR (all tree components)

Additional works for 1.495,83 EUR (Fixing the tree on the ground with the concrete (installation)).

This includes technical work (hours) of finalizing work and extraction for tree and bench and electro installation work.

Financing of this investment is as follows:

- 85% of the investment is financed through the ERDF i.e Interreg Central Europe programme
- 15% is financed by the partner of project i.e. Local Energy Agency Pomurje.

Orientation, distribution and selection of location affects amount of solar energy that will solar tree collect. Location is important also from social and educational point of view. The pilot action is located close to a school (public, open area) and thanks to that children and parents are encouraged to recognize PV technology.

Solar E-Tree shows use of RES for everybody and fits with surroundings. It confirms as eligibility of instalment also for municipal administration, which will acquire certain new knowledge, ability to compare between regions, new experiences in implementations of EEP. Solar E-Tree is the protection of the environment and ecological values symbolized facility, aims to raise awareness of the community on environmental sustainability. It is made from environment friendly materials, energy produced by solar cells.

¹ All parameters calculation of the planned pilot investment - Solar E-Tree was done for 30 years lifetime of the Solar E-Tree, taking into account the national coefficients and the current national situation in the field of solar energy.



3. Timeframe of the pilot action

Start date (dd.mm.yyyy.)	10.8.2018 (purchase of E-Tree)
End date (dd.mm.yyyy.)	8.10.2018 (finishing construction work, paving)
Remarks on timeframe: /	

4. Information on preparation of the pilot action

First step in preparing of pilot investment was to hire external expert that made feasibility study for planned EE and RES measures. The feasibility study has been developed for the “Solar Parks” and its installation in frequented public places. The second stage of the investment preparation was to hire external experts to develop professional - technical project documentation needed for smooth implementation of the pilot investment. This developed technical documentation was used for conducting public procurement for realization of a stylized Solar E-Tree, which includes the entire E-Tree installation with associated benches for seating, panels, sockets, LED lighting.

During the installation of the Solar E-Tree, the investor had to ensure the layout of the construction site in such a way that it was safe and enabled the smooth operation of the contractors. To this end, a Safety Plan for the safety and health at work on the construction site has been prepared. The latter is based on:

- Health and safety at work act (ZVZD-1), (Official Gazette RS [*Uradni list RS*], no. 43/2011),
- Decree on safety and health protection at work at temporary and mobile construction sites (Official Gazette of the Republic of Slovenia [*Uradni list RS*], No. 83/05);

The security plan envisages significant hazards or damages that could occur during the implementation of construction and assembly works and measures for their elimination, by laying down measures to ensure safety and health in carrying out work on the site, taking into account industrial activities at the site, measures while maintaining and cleaning the built object and performing particularly dangerous work.

All work on the site must be carried out in accordance with the safety plan and the provisions of the said regulations, thus ensuring the safety of employees at work, fire safety, the risk of electric shock, etc



5. Information on implementation of the pilot action

The first step in the preparation of the public procurement was the telephone verification of potential performers, then the forwarding of requests for a quote by e-mail and the receipt of original offers by regular mail. The first public procurement was carried out for the supply of a stylized Solar E-Tree (hereinafter E-tree), which means the entire E-Tree installation with associated bench seats, panels, sockets, LED lighting. The second step was the public procurement for construction work at the Primary School Puconci for the installation of a stylized E-tree, which included the layout of the foundations and the surroundings of the entire E-tree installation with the associated benches for sitting.

Since Solar E-Tree is treated as a small building / object there was not mandatory to provide building permits, only location information was needed. LEA Pomurje completed the application for location information and submitted it to the Municipality of Puconci. The municipality issued location information within 1-2 weeks.

The investment is located on the land owned by Municipality of Puconci. According to Slovenian legislation is possible the execution, on the principle that one organization (LEA Pomurje) erect/builds E-Tree on somebody else`s (in this case Municipality of Puconci) property / land. But after the installation of investment, on official opening of the Solar E-tree from the mayor of the Municipality Puconci, the ownership right was transferred to the Municipality of Puconci, and therefore all the obligations of maintaining of the Pilot investment. A special contract was also signed for this purpose between Municipality of Puconci and LEA Pomurje (annex).

6. Cost of the pilot action

Planned cost of the pilot action as in the last approved project Application Form (in Eur)	20.000,00 EUR
Planned ERDF funding rate (in %)	85%
Planned ERDF funding (in Eur)	17.000,00 EUR
Total real cost of the pilot action (in Eur, excl. VAT)	Solar E-Tree costs: 18.450,00 EUR Additional works: 1.495,83 EUR Total: 19.945,83 EUR
Total real ERDF funding of the pilot action in Eur	16.953,96 EUR
Notes (if necessary): /	



7. Comparability of the pilot actions (according to the results of the pilot actions)

<p>The impact of the pilot action (local, regional, national, global)</p>	<p>PI is an example of good practice to local and regional authorities both in rural/urban area and is an example to citizens how energy refurbishment results not only in energy and financial savings but also in better quality of space usage. The sun is a huge source of energy which has only recently been tapped into. It provides immense resources which can generate clean, non-polluting and sustainable electricity, thus resulting in no global warming emissions.</p> <p>One of the most remarkable reports about solar energy solution (Solar Tree for street lightning, home supply, station for e-cars...) is that it caters to basically all the energy needs. From lighting to heating, this can be utilized by first identifying energy sources and installing the right equipment with solar energy resolutions. The use of equipment made with such solutions, help reduce a good percentage of our energy bill through solar panel installation projects on places like rooftops. Impact on the national level in the sense that more frequent solutions of energy efficiency can reduce the use of imported sources as an energy source and thus keep the money in the country.</p>
<p>Number of potential users</p>	<p>5.840 potencial users per year</p>
<p>Number of population in city/municipality</p>	<p>In 2016 there were 5.958 inhabitants</p>
<p>The ratio of investment cost and potential users (€/per user)</p>	<p>3,42 € / (1) per capita on year</p>
<p>The ratio of investment cost and city/municipality population (€/per capita)</p>	<p>19.945,83 EUR / 5.958 municipality population 3,35 € / (1) per capita</p>
<p>Impact on the population - No of potential users/Total population * 100 (%)</p>	<p>98,02 %</p>



8. Transferability of the pilot action

This pilot action can be easily transferred to any region (rural areas or in cities, universities, companies, etc.) of Europe or all over the world. This is a good idea and its learning potential is high. With usage of solar panels electricity could be available to users in inaccessible areas and remote parts of the country where the cost of building infrastructure would be much higher than the cost of installing solar panels.

It is also good example for private investors, as with this pilot investment they can become better acquainted with the PV technology and decide to use small installations at their households.

Local institutions together with media can support design and implementation of new approaches to the technology through activities as local experiments, festivals, exhibitions and various information events. Constraints that we daily encounter can be solved if community works and acts as a collective, because only with active participation, support of different innovations and will to progress, small improvements can be achieved that will in future represent essential and irreplaceable aspect in the development of society.

Here defined pilot solution can in this context or in a different design be transferred to any public location in rural or urban areas. Implementation of this type of projects that promote the use of renewable energy at the local level is extremely important for the further development of any area.

The similar projects in Pomurje region or country can find possibilities in financing in budget funds from Municipalities, European funds from transnational and cross-border programs, Norwegian mechanism, Horizon 2020, Cohesion funds, Rural development program, Eco Fund funds, Crowdfunding, Public-private partnership, etc.

9. Photos of the pilot action

- *Before*



- *During*







• *After*





10. Conclusion and further suggestions

The LEAP (PP12) can say that the process of preparing and implementing the pilot action was carried out in good cooperation with the Municipality of Puconci, the Primary School Puconci and members of the Local support group (LSG). When supplying a stylized E-Tree, there were some small but solvable problems, for example, as to meeting all the specified requirements of the Solar E-tree in the application form.

With this project “Solar E-Tree”, we see an opportunity and at the same time a good example of the use of renewable energy sources (RES), as well as the presentation of a different-based exploitation of solar energy. The pilot action is located close to a school (public, open area). With this location we wanted to achieve large frequency of potential users in school (children and their parents), on sport grounds and in the sport hall (users, spectators) in cultural center “Memorial home of Štefan Küzmič” (visitors of the organized events and tourists), nearby the bus station. Solar E-Tree has besides its main function as a electricity plant, a important social and educational function. The goal is teach kids about the need to increase energy efficiency, environmental awareness and environmental protection in the earliest age using renewable sources of free energy. At the same time we want that young generation transfer their knowledge about new living habits to an older generation.

Suggestions for an ideal location for the implementation of the “Solar E-Tree” project can be both urban and rural area, where there is a constant concentration of people. Every case of a pilot investment is an example for itself, as it depends mainly on where we want to place the E-Tree and for the purpose of using it. The technical properties of the E-Tree are also adapted to this.



Annex: Contract between LEA Pomurje and Municipality of Puconci on transfer of investment in the framework of the RURES operation

Lokalna energetska agencija za Pomurje, Martjanci, Martjanci 36, 9221 Martjanci, davčna številka: SI88018822, matična številka: 2111462, ki jo zastopa Bojan Vogrinčič, direktor
(v nadaljevanju: *LEA Pomurje*)

in

Občina Puconci, Puconci 80, 9201 Puconci, davčna številka: 70902020, matična številka: 5883237, ki jo zastopa Ludvik Novak, župan
(v nadaljevanju: *Občina Puconci*)

sklepata

POGODBO O PRENOSU NALOŽBE V OKVIRU OPERACIJE »RURES«

1. člen

(uvodne ugotovitve)

(1) Stranki pogodbe uvodoma ugotavljata in si priznavata:

- da je LEA Pomurje partner v projektu z akronimom RURES, program Srednja Evropa in sicer s celotnim naslovom Promote the Sustainable Use of Renewable Resources and Energy Efficiency in Rural Regions - CE933;
- da izvedba operacije iz prejšnje alineje (v nadaljevanju operacija) vsebuje tudi pilotno investicijo postavitve kompozicije e-drevesa / solarnega drevesa s pripadajočimi klopmi;
- da sta medsebojno uskladili in dogovorili, da bo pilotna investicija postavljena na območju Občine Puconci;
- da sta medsebojno uskladili in dogovorili, da bo pilotna investicija po zaključitvi del in plačilu stroškov s strani LEA Pomurje prenesena v upravljanje in vzdrževanje k Občini Puconci;
- da je Občina Puconci, kot nov lastnik naložbe seznanjen s predlogom operacije in pravili javnega razpisa;
- da je 85 % naložbe financirano iz programa Evropskega sklada za regionalni razvoj oz. Interreg Srednja Evropa in 15% financira partner projekta, tj. Lokalna energetska agencija za Pomurje.

(2) Stranki pogodbe sklepata to pogodbo z namenom ureditve medsebojnih pravic in obveznosti glede prenosa naložbe na Občino Puconci - lastnika naložbe.

(3) V primeru, da je ta pogodba v kakšnem delu v nasprotju s predpisi programa Srednja Evropa ali kakšnim drugim predpisom, ki velja za izvedbo operacije, ali če to postane zaradi spremembe predpisa po sklenitvi te pogodbe, se v tem delu neposredno uporablja veljaven predpis, pogodba pa je neveljavna samo v neskladnem delu.

2. člen **(prenos naložbe)**

- (1) LEA Pomurje z izvedbo pilotne naložbe, ki je nastala v okviru operacije in ki je podrobneje opredeljena v Prilogi 1 te pogodbe, ki je njen sestavni del, nepreklicno prenaša lastninsko pravico na lastnika naložbe.
- (2) Naložba oz. pilotna investicija je realizirana na parceli št. 1988 v KO 77 - Puconci.
- (3) Priloga 1 so računi, ki so povezani z naložbo oz. pilotno investicijo, ki predstavljajo gradbena dela v višini 1.495,83 EUR in nabavo opreme v višini 18.450,00 EUR. Oba zneska sta brez DDV-ja.
- (4) Prenos lastninske pravice iz prejšnjega odstavka tega člena se izvrši tako, da LEA Pomurje lastniku naložbe t.j. Občini Puconci, le-to prepusti, izroči oziroma mu na njej omogoči posest.
- (5) S prenosom lastninske pravice je povezan tudi prenos vseh pripadajočih ključev za odpiranje revizijskih vrat / za vzdrževanje in s pilotno investicijo povezanih navodil za upravljanje in vzdrževanje.
- (6) Prenos naložbe po tej pogodbi je neodplačen in trajen.

3. člen **(obveznosti lastnika naložbe)**

- (1) Občina Puconci, kot nov lastnik naložbe se zaveže imeti naložbo po prejemu še najmanj petnajst let od dneva prevzema le te s to pogodbo.
- (2) Lastnik naložbe se zaveže v roku iz prejšnjega odstavka uporabljati oziroma omogočiti uporabo naložbe v skladu z operacijo in obveznostmi LEA Pomurje do program Srednja Evropa, kot financerjev. To vključuje tudi omogočanje občasne predstavitve zainteresiranim akterjem in predvsem stalne uporabe naložbe ciljni skupini, kot je opredeljena v projektu RURES.
- (3) Občasna predstavitev zainteresiranim akterjem, pomeni demonstracijo procesa postavitve in delovanja, v kolikor bodo le ti izrazili potrebo ter interes.
- (4) V obdobju do poteka roka iz prvega odstavka tega člena lastnik naložbe slednje ne sme odsvojiti.
- (5) V obdobju do poteka roka iz prvega odstavka tega člena lastnik naložbe slednje ne sme obremeniti, če bi to onemogočalo uporabo naložbe v skladu z drugim odstavkom tega člena.
- (6) Lastnik naložbe v obdobju iz prvega odstavka tega člena hrani, skrbi in varuje naložbo kot dober gospodar, kar pomeni, da lahko uredi zavarovanje odgovornosti in zavarovanje za poškodovanje, v vsakem primeru pa Občina Puconci poskrbi za odpravo napak, ki so rezultat poškodb, kraje in drugih vplivov iz okolja, ki bi lahko predstavljali vzrok za nedelovanje in nezmožnost uporabe e-drevesa.

4. člen **(medsebojno obveščanje)**

- (1) Pogodbene stranke se dogovorita, da se bosta medsebojno ažurno obveščali o kakršnihkoli okoliščinah ali spremembah, ki vplivajo ali bi lahko vplivale na izvajanje te pogodbe.
- (2) Za pošiljanje obvestil v zvezi s to pogodbo in za tekoče izvrševanje določil te pogodbe, se uporabljajo sledeči kontaktni podatki:
 - za LEA Pomurje; Bojan Vogrinčič, direktor,
 - za Občino Puconci; Ludvik Novak, župan.

5. člen
(protikorupcijska klavzula)

Pogodba, pri kateri kdo v imenu ali na račun druge pogodbene stranke, predstavniku ali posredniku organa ali organizacije iz javnega sektorja obljubi, ponudi ali da kakšno nedovoljeno korist za:

- pridobitev posla ali
- za sklenitev posla pod ugodnejšimi pogoji ali
- za opustitev dolžnega nadzora nad izvajanjem pogodbenih obveznosti ali
- za drugo ravnanje ali opustitev, s katerim je organu ali organizaciji iz javnega sektorja povzročena škoda ali je omogočena pridobitev nedovoljene koristi predstavniku organa, posredniku organa ali organizacije iz javnega sektorja, drugi pogodbeni stranki ali njenemu predstavniku, zastopniku, posredniku;

je nična.

6. člen
(mirno reševanje sporov)

Pogodbeni stranki se zavežeta, da bosta morebitne spore iz te pogodbe reševali na miren način.

7. člen
(veljavnost)

- (1) Ta pogodba začne veljati s podpisom obeh pogodbenih strank in velja do preteka roka iz prvega odstavka 3. člena te pogodbe.
- (2) Po zaključku veljavnosti te pogodbe in s tem povezani odgovornosti za vzdrževanje in ohranjanje pilotne investicije, je Občina Puconci zavezana, da poskrbi za ustrezno demontiranje / reciklažo celotne konstrukcije in izvedbo ostalih del, ki bodo povezane z vzpostavitvijo v prvotno stanje, v skladu s tedaj veljavnimi zakonskimi določili.

8. člen
(končne določbe)

- (1) Za razlago določil te pogodbe se uporabljajo določbe Obligacijskega zakonika - OZ ter drugi veljavni predpisi Republike Slovenije.
- (2) Če bi se izkazalo, da je katerakoli določba te pogodbe iz kakršnihkoli razlogov neveljavna, nična ali neizvršljiva, ostanejo vse ostale določbe še naprej v veljavi.
- (3) Ta pogodba je sklenjena v dveh izvodih, od katere vsaka pogodbeni stranka prejme en izvod

OBČINA PUCONCI
Ludvik Novak, župan

Podpis



Puconci, dne 6.11.2018

Številka: 302-0014/2017

LOKALNA ENERGETSKA AGENCIJA ZA POMURJE
Bojan Vogrinčič, direktor

Podpis



Puconci, dne 6.11.2018

Številka: _____

Priloga 1 – računa, ki sta povezana z realizacijo postavitve e-drevesa