



# RESINDUSTRY

Interreg Europe



European Union  
European Regional  
Development Fund

# RESINDUSTRY PROJECT

## Interreg Europe



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# Policies for Renewable Energy Sources in industry

**RESINDUSTRY aims to increase the energy independence of EU industries by boosting the integration of renewables in industry.**



**Duration: 1 August 2019 – 31 July 2023**

**The project is supported by the INTERREG EUROPE Programme funded by the European Regional Development Fund (ERDF) and co-financed by the participants.**




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# Policies for Renewable Energy Sources in industry

## Project Partners:


 **University Centre for Energy Efficient Buildings, CTU in Prague (LP)**

 **LAB University of Applied Sciences (Finland)**

 **Extremadura Energy Agency (Spain)**

 **Tartu Regional Energy Agency (Estonia)**

 **Marshal Office of Świętokrzyskie Region (Poland)**

 **Vorarlberg University of Applied Sciences (Austria)**

 **Ministry for Gozo (Malta)**



# Policies for Renewable Energy Sources in industry

## Outputs:

- 10 Best practices for promoting renewables in industry
- 83 Policy learning events and exchanges of experience on both national and international levels
- 7 Regional Assessments, including the Strategic Analysis of RES Technologies and KPIs reports
- 7 Action Plans
- 90 participants with increased capacity
- Monitoring and evaluation of Action Plans during the Phase 2



# PROJECT RESULTS ACHIEVED as of APRIL 2022 (PHASE 1)

## GOOD PRACTICES

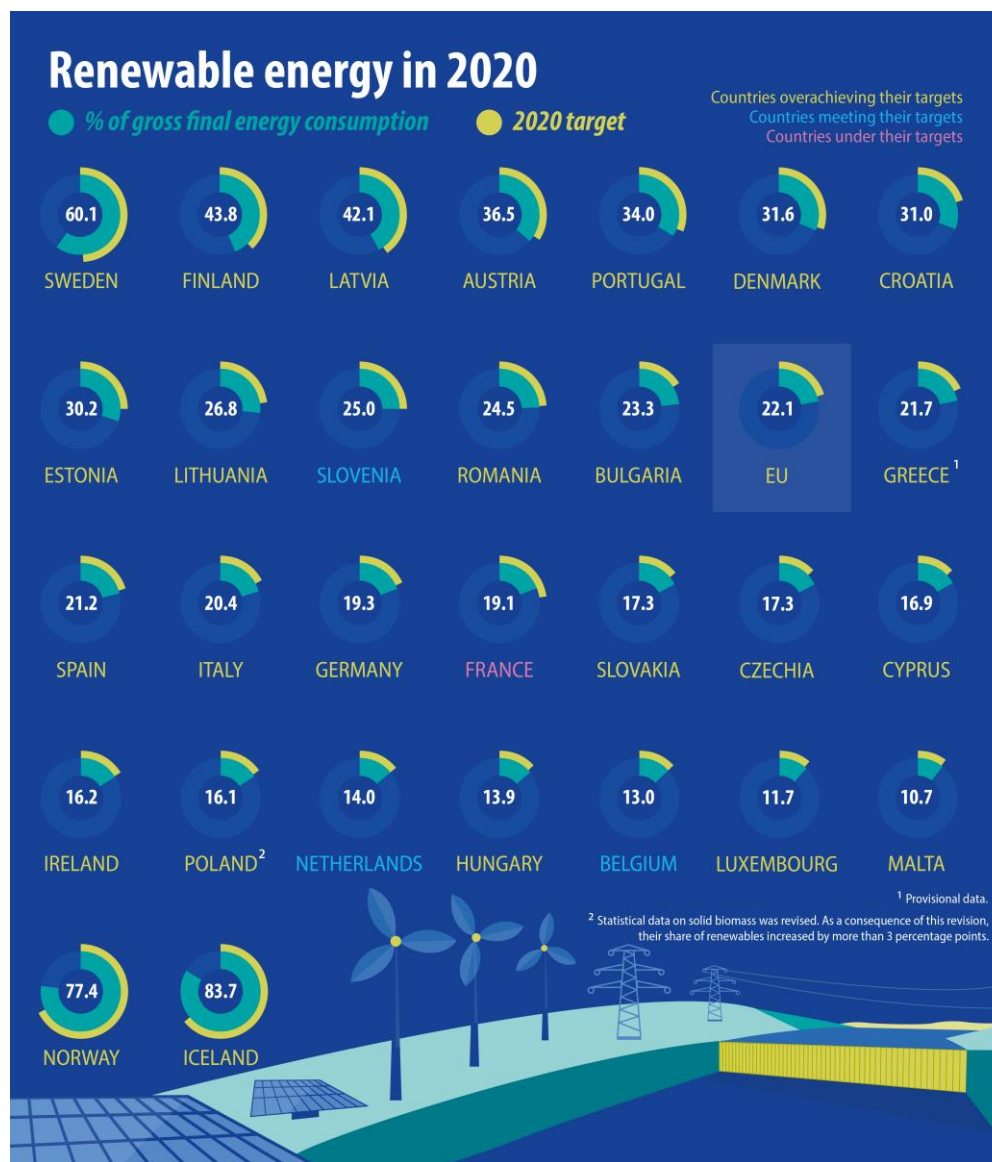
**68 examples of Good Practices collected**

**<https://projects2014-2020.interregeurope.eu/resindustry/good-practices/>**

**15 approved for the Interreg Europe  
Policy Learning Platform**



# RES IN EU COUNTRIES

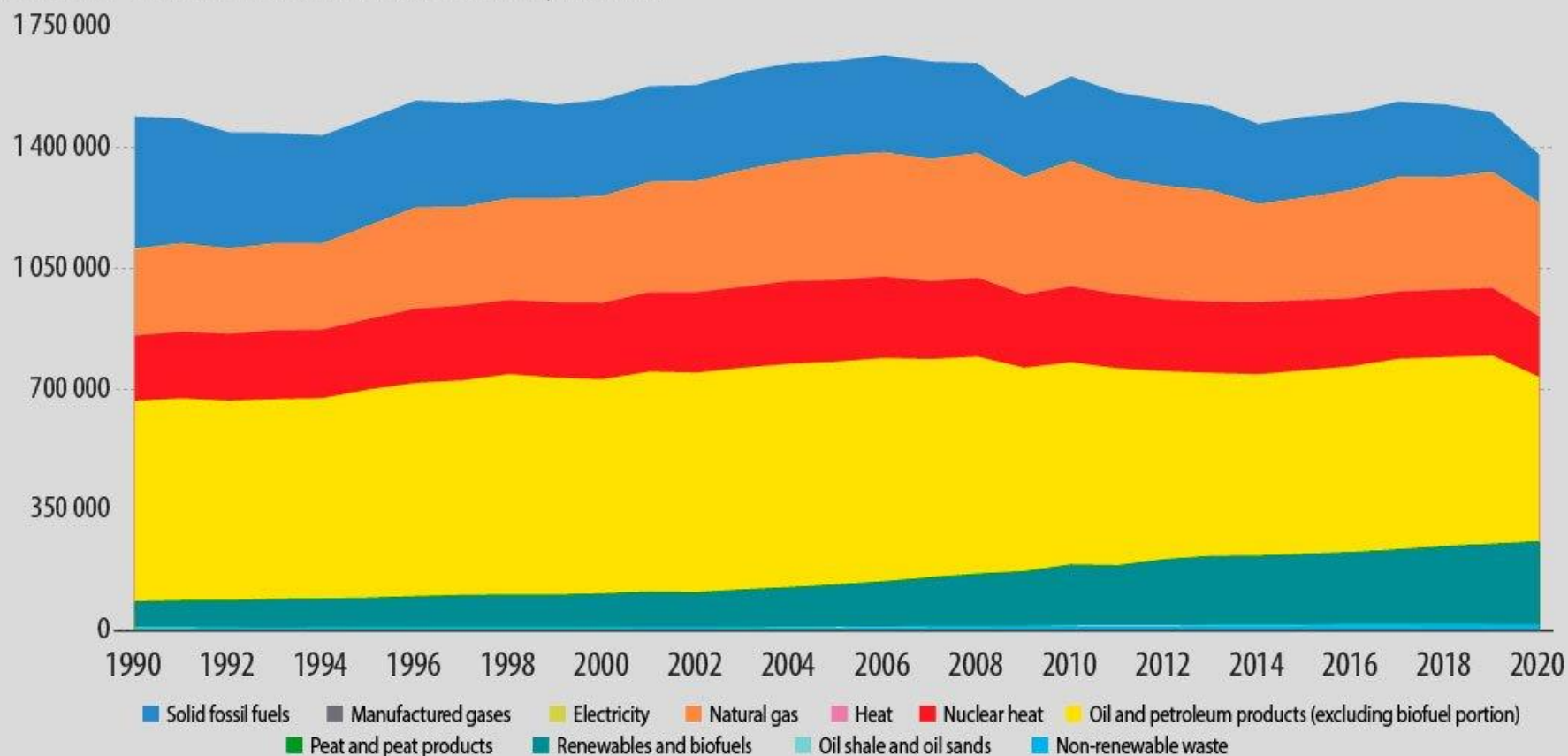




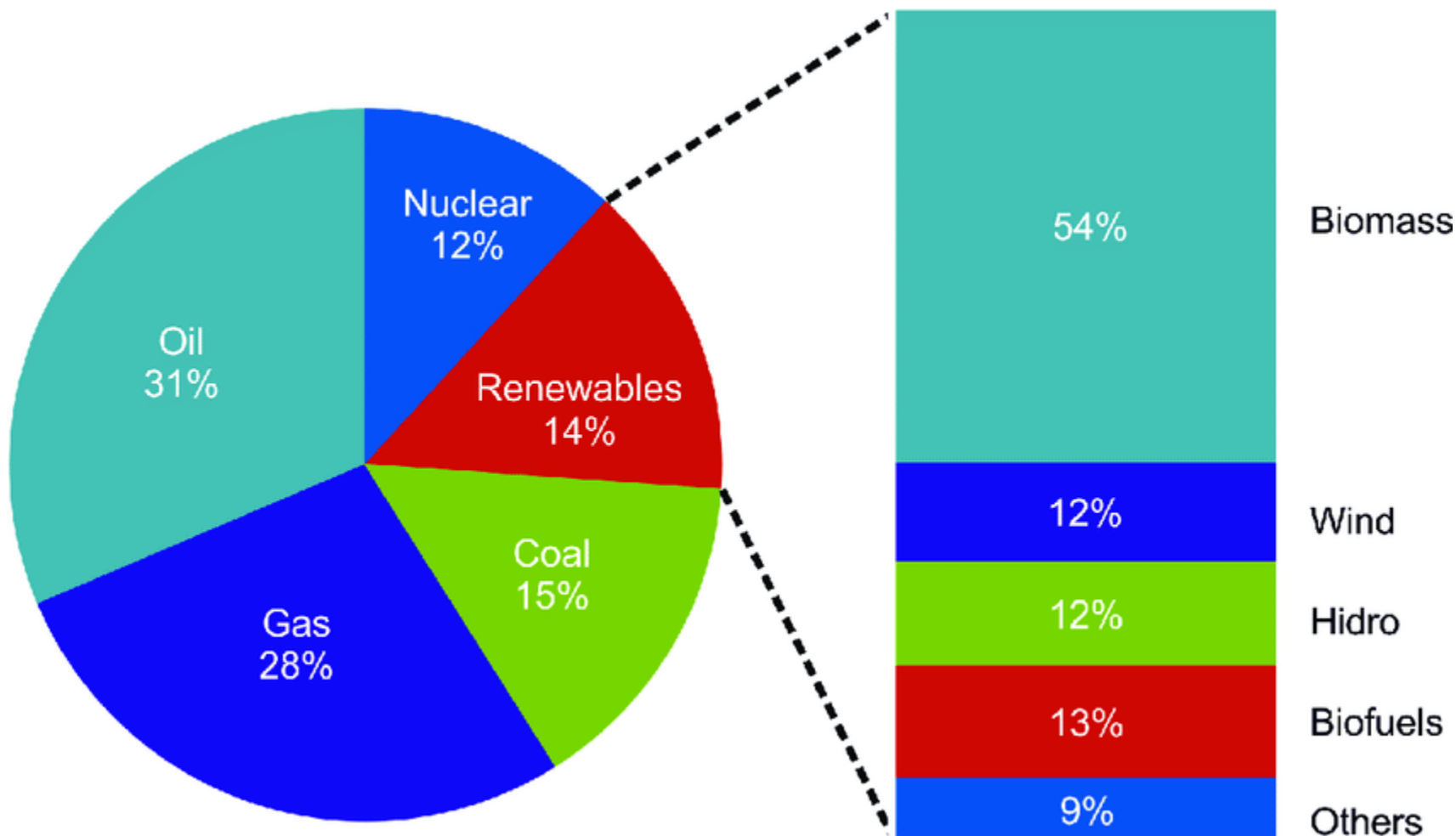
# ENERGY SOURCES IN TOE

## Gross available energy by product

EU (1990-2020), Thousand tonnes of oil equivalent



# EU ENERGY MIX





# GOOD PRACTICES

Country	Name of the Good Practice	Type of RES	Total Investment
Austria	Bio-heating Frastanz	Biomass	3 mil. EUR
Finland	District heating production from renewable sources	Bio-heating	180 mil. EUR
Poland	Installation of photovoltaic panels in the Municipal Service Management Company sp. z o.o.	Solar energy	542.690 EUR
Poland	A PV power plant of up to 1MW at HEKO Plastics and Various Products Plant	Solar energy	441.521 EUR
Czech Republic	MALFINI – hybrid photovoltaic system with accumulation in batteries	Solar energy	600.000 EUR
Spain	Photovoltaic installation in ACENORCA	Solar energy	75.000 EUR
Jordan	Innovative Solar Process Steam at RAM Pharma	Solar energy	360.000 EUR
Austria	Flat-Plate Solar Collectors at Fleischwaren Berger for Boiler Feed-water Preheating	Solar energy	790.000 EUR
Finland	Hybrid solar thermal and air heat pump system for district heating	Biomass heating power	650.000 EUR
Malta	Installation of solar photovoltaic system and vertical axis wind turbine at FXB Industrial Estate	Solar energy	105.000 EUR
Finland	Utilization of biowaste streams - bio-based industrial symbiosis as RES	Biogas	17 mil. EUR
Finland	Geothermal heating and cooling of factory using heat pumps	Heating power	607.000 EUR
Estonia	Biogas production through anaerobic fermentation of waste water and whey in dairy products factory	Biogas	6 mil. EUR
Estonia	Biogas production plant based on brewery's wastewater	Biogas, Solar power	2.5 mil. EUR
Spain	RUBI circular industry	Solar energy	N/A



## Summary of the BP

- Leading suppliers of promotional textiles
- Photovoltaic power plant
- Cogeneration units
- Electric forklifts and electric vehicles
- Timescale:  
June - August 2019



## RES type used



## Policy instrument used

Operational Programme  
Enterprise and Innovations for  
Competitiveness 2014-2020

Parameter	Amount	Units
CO <sub>2</sub> Emissions saved	291,04	t/y
Installed power	296	kW
Investment costs per installed kW	3 000	EUR/ kW
Payback period	7-8	y
Total project costs	600 000	EUR

## Evidence of Success/ Potential for Transfer

- In the case when battery are fully charged, the warehouse can operate for several hours
- In addition, the cogeneration unit is independent of the distribution system for several days in direct sunlight



## Summary of the BP

- Czech Furniture manufacture
- Subsidiaries in other 6 countries
- Wood residues from production are burned in the boiler
- Timescale: 10/2018-10/2019



## RES type used



## Policy instrument used OP EIC Programme

Parameter	Amount	Units
CO <sub>2</sub> Emissions saved	80	t/y
Installed power	300	kW
Investment costs per installed kW	800	EUR/kW
Payback period	19,6	y
Total project costs	240 000	EUR

## Evidence of Success/ Potential for Transfer

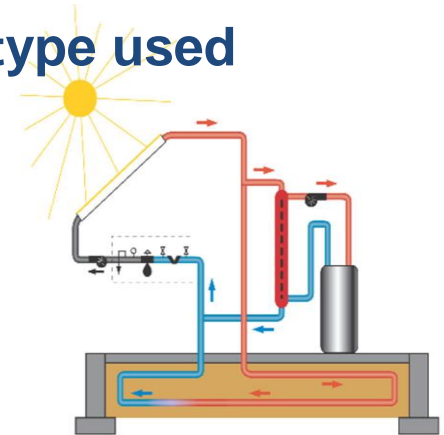
- Reduction of annual operating costs by approximately 11.965 EUR
- Reduction in emissions of harmful substances into the air › improving the environment
- Increasing competitiveness and saving operating costs › possibility of further investment in production and sale › potential employment expansion

## Summary of the BP

- Meat processing company
- Preheating of the boiler feed-water, warm-water used for cleaning processes
- Timescale:  
06/2012-07/2013



## RES type used



## Policy instrument used EU FP-7 Project InSun, ARPA Subsidy

Parameter	Amount	Units
CO2 Emissions saved	165	t/y
Installed power	590	kW
Investment costs per installed kW	983	EUR/kW
Payback period	N/A	y
Total project costs	790 000	EUR

## Evidence of Success/ Potential for Transfer

- The company spends around 2 million € for energy per year
- Fleischwaren Berger saves 62.500 l of fuel oil a year and preserves the environment by greenhouse gas Emissions of 163 tons › savings of 4-5 % on the company's total fuel consumption

# Labio biogas and composting plant



## Short summary of the BP

Composting of waste from biogas production is used to heat the reactors of biogas plant

### Policy instrument used:

Business Finland Energy Aid

### RES type used:

Biomass

### Evidence of success

1. Uses and produces renewable energy as well as natural fertilizer
2. 40 000 MWh of biogas per year
3. Plant is able to operate at a profit
4. 15 years without a single day of downtime



Parameter	Amount	Units
CO2 Emissions saved	11 000	t/y
Installed power	7850	kW
Investment costs per installed kW	2100	EUR/kW
Payback period	25	y
Total project costs	17 M	EUR



# Fazer heat from waste biomass



## Short summary of the BP

Fazer is a Finnish bakery and confectionery company. Processed oat hull mass from making of xylitol sweetener are burned for process heat and district heating

## Policy instrument used:

None

## RES type used:

Biomass

## Evidence of success

1. Utilizes previously commercially unused material for both xylitol production and heating afterwards
2. Great example of circular economy
3. Replaces natural gas use



Parameter	Amount	Units
CO2 Emissions saved		t/y
Installed power	8000	kW
Investment costs per installed kW	1000	EUR/kW
Payback period		y
Total project costs	8 M	EUR

# Halton geothermal heat pumps



## Short summary of the BP

Halton Marine factory producer of HVAC systems for ships, heats and cools itself using reversible geothermal heat pumps

## Policy instrument used:

Business Finland Energy Aid

## RES type used:

Geothermal

## Evidence of success

1. 90 % reduction in emissions from heating
2. 35 % savings on heating energy
3. Replaces both heating and cooling systems saving money on separate investments
4. Cooling is so efficient that it exceeds process demands, allowing rest to be used for employee comfort in summer months



Parameter	Amount	Units
CO2 Emissions saved	103	t/y
Installed power	345	kW
Investment costs per installed kW	1750	EUR/kW
Payback period	8-10	y
Total project costs	607 000	EUR



**Industrial park** – shared energy between industries to reduce transport emissions and waste management

**Installed capacity** 842 kWp, which represents 26% coverage of the energy demand

**Emissions savings** 298 t/y

Rubí's industry is responsible for 40% of the greenhouse gas emissions produced in the area



# Biogas production plant based on brewery's wastewater

## BIOGAS

### Summary of the BP

- **Brewery's biogas production plant to reduce the burden on the city's wastewater network and increase the company's resource efficiency.**
- **2020-2021**



**50% grant**

Parameter	Amount	Units
Installed power	620	Nm <sup>3</sup>
Investment costs per installed kW	4000	€/Nm <sup>3</sup>
Payback period (SPP) no grant	13	y
Payback period (SPP) with grant	4,5	y
Total project costs	2,5	M€

### Evidence of Success/ Potential for Transfer

- **In addition to reducing wastewater disposal costs and its environmental impact the plant is also economically profitable for the company. Some of natural gas imported to produce heat can be replaced by biogas produced on site (100% of biogas produced on site are used on site for heating)**

# Fernwärme Frastanz



## Summary of the practice:

- A biomass heat project using industrial and agricultural wood waste to produce heat for the municipality of Frastanz in Vorarlberg, Austria
- Timespan: 2009-2011
- Policy instrument used:  
Structural EU funds – ERDF, e5 program

## Municipality of Frastanz / Vorarlberg, AT



## RES type used: Biomass energy

Parameter	Amount	Units
Installed power	3.3	MW
Investment costs per installed kW	930	EUR/kW
Total project costs	3.1 Mil	EUR

## Evidence of success

In Austria, the third of its energy is generated by renewable energy sources.

Requirements for the modernization of Austria's **grid system**.

Frastanz municipality follows the pattern by meeting **encountered demands**.

Significant **public response** – the project offered customer a very good price levels

# Installation of solar PV system at FXB Industrial Estate



MINISTRY FOR GOZO

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## Short Summary of the BP

- One of the largest manufacturer of furniture in the domestic market;
- Operation of such manufacturing operations is quite energy intensive;
- Invested in solar PV and wind turbine to generate clean energy and offset the energy required from the grid.

## Policy instrument used:

OP1 PA4: Climate Change and Resource Efficiency

## RES type used: Solar & Wind Power

- 334 PV × 330 Wp
- 1 VAWT

## Evidence of success

1. Energy Generated from the PV panels covers over 20% of the building's energy demand;
2. Offsets over 442 tonnes of carbon dioxide annually.



Parameter	Amount	Units
CO2 Emissions saved	112	t/y
Installed power	100.2	kWp
Investment costs per installed kW	1048	€/kW
Payback period	4.2	y
Total project costs	105k	EUR

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## Thank you!

<https://projects2014-2020.interregeurope.eu/resindustry/>

Questions welcome



*Project media*