D.T2.5.2

Report of the pilot activities to assess Industrial sectors RE projects in Austria

WP T2: Activity 2.5 PA 2: Improving energy efficiency in Industry Sector

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Introduction

The FIRECE project aims to contribute to the achievements of targeted results of Regional Energy Plans through an increased use of (innovative) financial instruments in the Central Europe area. The particular focus is on public support to industry to invest into energy efficiency and renewable energy sources.

The activity *2.5 Improving energy efficiency in Industry Sector* includes Pilot Actions carried out in five partner countries to assess Industrial sector RE projects using the Project level tool developed in WP T1 (O.T1.4) and updated in WP T2 (O.T2.2). The goal is to assess the public investments to support Industry low carbon transition: analysis of projects/investment plans elaborated by SMEs on EE/RES to verify their quality and quantity contribute to achieve the Energy Plans' targets.

The Project level tool main focus is to evaluate economic parameters of a particular project (e.g. NPV – net present values, CF – cash flow, etc.) as well as its environmental benefits in terms of decreased carbon emissions.

This report summarizes the activities that were carried out in Austria

EXECUTIVE SUMMARY

Country / region / PA2 Implementation area

Austria

Relevant energy saving funds:

ERDF: The European Regional Development Fund in Austria 2014-2020

Number of SME's involved:

6 medium sized

2 small sized

Type of projects: new/ finalized / ongoing projects

8 companies were analysed, 5 are finalized, 3 are ongoing projects.

Energy saving measures / type of investments analysed

The following energy saving measures were analysed:

- Installation of a PV system
- Installation of a solar thermal system
- Installation of a heat pump
- Replacing the illumination on LED
- Installation of cogeneration units
- Decrease of losses in heat contributions
- Change of technological processes
- replacement of compressors
- waste heat utilisation
- buildings insulation

[PR1] megjegyzést írt: I suppose we shall list here all the measures from all 8 projects. Otherwise, it would be a project-specific information that could be moved to the chapter 5.

[RS2R1] megjegyzést írt: I agree with Pavel's suggestion

[IH3R1] megjegyzést írt: Yes, we should only list here those measures from 8 projects, that were analysed.

*)SMEs are the main target group of the Pilot Action 2. Under Regulation (EU) No 651/2014 of the European Commission, micro, small and medium-sized enterprises (SMEs) are enterprises with fewer than 250 persons and whose annual turnover does not exceed EUR 50 million and / or \ their annual balance sheet total does not exceed EUR 43 million.

1. SELECTION OF THE FINANCIAL INSTRUMENT ADDRESSED TO ENERGY SAVINGS FOR INDUSTRY

The regional and federal guidelines for the promotion of energy and environmental measures are described below.

1.1 Guideline for the promotion of energy and environmental measures (regional subsidy)

In the context of support for energy and environmental measures, investment in energy saving measures and in measures relating to renewable energy sources shall be supported if the measures are taken voluntarily or if the implementation of the measure results in the environmental obligations imposed by law being significantly undercut or, where appropriate, improved. The presentation of a detailed concept for the measures is a basic requirement for support.

The following measures are only supported in combination of at least 3 modules:

Module 1: Energy efficiency and energy saving

- *Thermal building refurbishment* (limited funding amount max. € 100,000.--) - Thermal building refurbishment concerns the improvement of the thermal insulation of buildings older than 20 years. Investments for the insulation of the top floor ceilings or the roof, the insulation of the external walls, the insulation of the bottom floor ceiling or the basement floor, the renovation or replacement of windows and external doors, ventilation units with heat recovery, external shading systems to reduce the cooling requirements of the building, the installation of building-integrated photovoltaic systems, ventilated façade systems, ventilated façade shuttering, extensive roof greening and façade greening are subsidised.

- *Heat pumps* - Heat pump systems for heating and/or hot water supply of buildings are subsidised. These include heat pumps, heat source systems (geothermal collector, groundwater wells, deep drilling), primary hydraulic integration and system controls.

- *Heat recovery* from refrigeration plants (cooling and freezing plants as well as process refrigeration plants, combined heat and cold systems) and from ventilation systems (use of heat from exhaust air to heat the room air)

- *Other heat recovery* or use of previously unused heat flows (e.g. air compressors, industrial processes, waste heat from waste water) as well as heat pumps to tap low temperature waste heat - Heating optimisation in existing buildings (retrofitting of exhaust air heat recovery, speed control, efficient pumps, control technology) with at least 10 % energy savings - Lighting optimisation in existing buildings by installing ballasts and sensor-guided control with at least 10 % energy savings
- Outdoor *lighting* optimisation (street lighting)

Module 2: Energy production including storage and distribution

- Solar systems thermal or electrical - Solar systems for hot water preparation or for partial solar space heating including piping, heat storage and distribution networks as well as for electricity production in buildings in use are supported.
- Photovoltaic systems incl. technical and mechanical accessories
- Electrochemical or thermal energy storage including control and regulation systems

Module 3: Alternative mobility

- Vehicles with alternative drive systems. (Support is available for the acquisition of vehicles with a maximum permissible gross weight of up to 3.5 t with pure electric drive (BEV), fuel cell drive (FCEV), plug-in hybrid drive (PHEV), range extender and range extender (REX, REEV)).
- Commercial vehicles with alternative drive systems
- E-charging stations plus accessories
- E-bikes and transport bikes

Module 4: Digitization, regulation and control

- Energy management systems including relevant hardware and software
- Energy accounting incl. associated software
- Energy monitoring including suitable hardware (sensors, measuring devices etc. and Software
- Measuring instruments, equipment hardware and software for regulation and control

Subsidy recipients

Recipients of subsidies are Burgenland municipalities and associations of municipalities or organisations which are 100 % owned by municipalities in Burgenland. [1]

1.2 Federal Subsidies

Corporate environmental promotion ("Environmental promotion in Germany", "UFI") is primarily intended to promote environmental protection measures in companies. This means that the target groups of this funding programme are companies and other organisations active in business. Non-Austrian companies can also be supported. The decisive factor is that the environmentally relevant investments are made at company locations in Austria. The individual subsidy guidelines of KPC (Kommunal Kredit Public Consulting) for each measure are described below.

1.2.1 Thermal insulation (subsidy rate 30%)

Subsidies are available for measures to improve the thermal insulation of buildings used for business purposes that are more than 20 years old. All businesses, other business organisations, associations and confessional institutions can submit proposals. The amount of funding depends on the quality of the renovation and is up to 50% of the eligible costs.

Subsidies are available for measures to improve the thermal insulation of buildings used for business purposes that are more than 20 years old. All businesses, other entrepreneurial organisations, associations and confessional institutions can submit applications. The amount of funding depends on the quality of the renovation and is up to 50% of the eligible costs. [2]

[1] (RMB, 2020); available:https://www.eu-service.at/fileadmin/user_upload/Downloads/Dokumente/VO_RL/Richtlinie_Energie-_und_Umweltmassnahmen_des_Landes_Burgenland.pdf

[2] (Umweltförderung, 2020); available: https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/SUN_Betriebe/UFI_Standardfall_Infoblatt_GEBSAN.pdf

1.2.2PV systems (subsidy rate 35%)

In accordance with the guidelines for environmental funding in Germany as amended, the funding amounts to a maximum of 35% of the recognisable investment costs, irrespective of the flat rates stated.

Individual investments

- For free-standing systems/roof-top systems up to the upper limit of 5 kWpeak, the subsidy flat rate of 250 Euro/kWpeak applies. - For building-integrated photovoltaic systems (BIPV) up to the upper limit of 5 kWpeak, the subsidy flat rate of 350 Euro/kWpeak applies.

Community installations

- For roof-top systems up to the upper limit of 5 kWpeak per application, the subsidy flat rate of 200 Euro/kWpeak applies.

- For building-integrated photovoltaic systems (BIPV) up to the upper limit of 5 kWpeak per application, the flat-rate subsidy of 300 Euro/kWpeak applies. [3]

1.2.3LED Lighting (subsidy rate 30%)

Funding is provided for the conversion of conventional luminaires to new LED systems in existing buildings used for business purposes and for the additional installation of lighting control systems. The total connected load of the installed LED luminaires must be at least 500 watts. All businesses, other entrepreneurial organisations, associations and confessional institutions can submit applications. Submission for funding is made after implementation of the measure, whereby the invoice date for the final invoice for the main system components (e.g. LED lights, switch and plug devices, control system) may not be more than six months in the past. The grant amounts to 600 Euro/kW connected load. A bonus of 100 Euro/kW connected load can be granted if a lighting control system is implemented at the same time. The subsidy is paid out as a non-repayable grant and is limited to 30% of the investment costs. [4]

[3] (Umweltförderung, 2020); https://www.klimafonds.gv.at/wp-content/uploads/sites/6/Leitfaden_Photovoltaik_2020.pdf

[4] (Umweltförderung, 2020); https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/LED_Systeme_im_Innenbereich/UFI_Pauschalen_Infoblatt_LED_PAU.pdf

1.2.4 Solarthermal systems (subsidy rate 30%)

The new construction and renewal of solar thermal systems is supported. The gross collector area of the newly constructed system must in any case be less than 100 m2. Applications for subsidies must be submitted after the project has been implemented, but no later than six months after the accounts have been prepared. All businesses, other entrepreneurial organisations, associations and confessional institutions can submit applications. The subsidy is calculated as a lump sum based on the size of the plant and is limited to 30% of the eligible costs. The subsidy is awarded as a one-off, non-repayable investment grant in the form of a "de minimis" subsidy. [5]

1.2.5 Heat pumps (subsidy rate 20%)

Funding is available for electrically operated heat pumps with a nominal heat output of 100 kW or more, which are used for the predominant generation of heating, hot water or process heat or for supplying heat networks. All businesses, other entrepreneurial organisations, associations and confessional institutions can submit applications. The subsidy amounts to up to 20 % of the additional eligible investment costs. [6]

1.2.6 Heat recovery (subsidy rate 30%)

Subsidies are available for measures for the efficient use of energy in commercial and industrial production processes and in existing buildings, heat recovery and lighting optimisation (e.g. street lighting). All companies, other entrepreneurial organisations, associations and denominational institutions can submit applications. The subsidy amounts to up to 30 % of the eligible additional investment costs. Please note that the time of application for heat recovery depends on the type and performance of the heat recovery system. [7]

[5] (Umweltförderung, 2020); available: https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Solarthermie_Solare_Grossanlagen/UFI_Infoblatt_Solaranlagen_PAU.pdf

[6] (Umweltförderung, 2020); available: https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Waermepumpen/UFI_Standardfall_Infoblatt_WAERMPU.pdf

[7] (Umweltförderung, 2020); available: https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Energiesparen_in_Betrieben/UFI_Standardfall_Infoblatt_ENERGSPA.pdf

1.2.7 Energy saving measures (subsidy rate 30%)

Subsidies are available for measures for the efficient use of energy in commercial and industrial production processes and in existing buildings, heat recovery and lighting optimisation (e.g. street lighting). All companies, other entrepreneurial organisations, associations and denominational institutions can submit applications. The subsidy amounts to up to 30 % of the eligible additional investment costs. Please note that the time of application for heat recovery depends on the type and performance of the heat recovery system. [8]

[8] (Umweltförderung, 2020); available:

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Energiesparen_in_Betrieben/UFI_Standardfall_Infoblatt_ENERGSPA.pdf

2. SELECTION OF SME's INVESTMENT PROJECTS FOR THE ASSESSMENT

2.1 Criteria followed to identify projects

To select the pilot projects, some criteria were included: the type and the size of the company. All projects have energy saving, energy efficiency potentials or changes to renewable energy technologies or processes. In Figure 1 is the type of company shown.

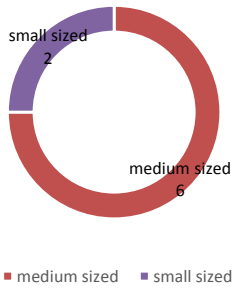

Figure 1 Type of size

In Figure 2 is the type of company shown. There are four engineering companies, two manufacturing-, a metal- and a food - processing company.

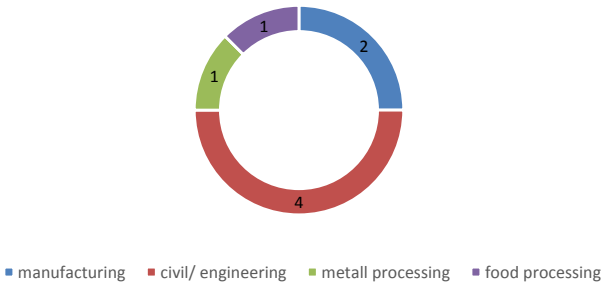

Figure 2 Type of company

2.2 Description of SME's investment projects analysed

A short description of the companies chosen follows: 4 of the projects are engineering or civil engineering companies. 3 of them are manufacturing companies and one is a food processing company. Three of the four engineering projects are still ongoing. The others are finalized now. 7 of the projects represent installation of renewable sources, like installation of PV systems- one project focus on increasing energy efficiency (replacement of compressor, installation of cogeneration and change technological processes). All of projects set on energy saving measures, like new LED- Lighting or a new building insulation or a modernisation of technology processes. A summary of the Pilot Projects is in Table 1.

Table 1 Overview of Pilot Projects

Project	Sector	Size	Measures	Investment	Status
01	Technical engineering	medium	Installation of PV system	295.450 €	finalized
02	Manufacturing (joinery)	small	Installation of PV system	22.000 €	finalized
03	Manufacturing (metal)	medium	Change of technological processes Installation of cogeneration Replacement compressor Waste heat utilisation	100.000 €	finalized
04	Engineering Bureau	small	Installation of PV system Installation of heat pump Lighting	31.000 €	finalized
05	Civil Engineering	medium	Heat pump LED lighting PV system	250.700 €	ongoing
06	Manufacturing (wood)	medium	Heat recovery Heat pump Lighting PV system	284.400€	ongoing
07	Civil engineering	medium	New insulation Lighting Solar thermal system PV system	208.200 €	ongoing
08	Food Processing	medium	Installation of PV system	85.000 €	finalized

3. CONTRIBUTION OF SME's PROJECTS TO ACHIEVE REGIONAL ENERGY TARGETS

#mission2030

Austria affirms its commitment to the international climate targets and to an active Climate protection and energy policy. The central goal of the Austrian government's climate policy is to reduce greenhouse gas emissions. Austria will reduce its greenhouse gas emissions by 36 % by 2030 compared to 2005 reduce. This requires a coordinated, concerted climate and energy policy that strikes the right balance between environmental sustainability, competitiveness/affordability and security of supply now and is guaranteed in the future. For this reason, the Federal Government has decided to draw up an integrated climate and energy strategy as one of its first important measures in order to take responsibility for to adopt a consistent decarbonisation path until 2050.

The share of renewable energies in Austria is currently around 33.5 %. Electricity is already generated at around 72 % from renewable sources. Austria is therefore already a pioneer in the electricity sector in terms of Europe, although significant net imports of electricity have been necessary in recent years.

The Austrian government has therefore set itself the goal of generating electricity on this scale by 2030, that the total national electricity consumption is 100% (national balance sheet) from renewable energy sources is covered. This will require an expansion of all renewable energy sources, infrastructure, storage facilities and investments in energy efficiency. [9]

[9] (BMRLT, 2020) available: https://www.bmlrt.gv.at/service/publikationen/umwelt/mission-2030-oesterreichische-klima-und-energiestrategie.html

THE VISION - Climate Neutral Austria 2050

A long-term and comprehensive strategy requires a guiding vision. The future is that which we create, not a predetermined state. To initiate a long-term path, an appealing and inspiring long-term vision is needed. Austria has the goal of becoming climate neutral by the year at the latest - that is our vision.

Key global fields of action addressed in the IPCC Report are

- Reducing the carbon intensity of electricity generation to zero and substantially reducing total energy consumption by the middle of the century and increasing the electrification of energy consumption.
- Increasing the production of renewable energy (bioenergy, hydro, wind, solar) by 60 % between 2020 and 2030 and increasing primary energy production from renewable energy to 49 - 67 % by 2050.
- Changing land use to meet the competing demands of settlements, food production, livestock, bioenergy, biodiversity and ecosystem services.
- Industrial emissions are 70 - 90 % lower in 2050 than in 2010.

At the European Councils in June 2019 and December 2019, Austria spoke out in favour of achieving climate neutrality/net zero emissions of the EU by, whereby the contribution of nuclear energy, carbon capture and storage is rejected from the Austrian point of view (CCS, prohibited in Austria due to open questions regarding safety) and the role of natural sinks in achieving climate neutrality is considered critical. Together with Luxembourg, Ireland and Lithuania, Austria has sent a letter to the EC requesting it to present a 100% "renewable" net zero scenario by as all scenarios presented by the EC so far include nuclear energy. The EC's reply sees the presentation of such a scenario as an encroachment on the rights of the Member States regarding the free choice of national energy resources. For Austria, the presentation of such a scenario merely means an examination of its feasibility. [10]

[10] (BMRLT,2020); available: https://www.bmlrt.gv.at/umwelt/klimaschutz/langfriststrategie-2050.html

4. ACTIVITIES CARRIED OUT TO ASSESS INDUSTRIAL SECTORS RENEWABLE ENERGY PROJECTS

4.1 Meeting with Local actors and Financial Instruments

[RS4] megjegyzést írt: It could be better to specify the content of this paragraph: shall we shortly describe meeting (a part from T2.2.2) held during the pilot action?

[IH5R4] megjegyzést írt: Here is the proposition of the content.

Forschung Burgenland organized a local coffee workshop on 23rd of June with stakeholders of Landesholding Burgenland and experts of IFIs from Forschung Burgenland. Due to COVID-19 restriction the workshop was arranged as a direct meeting and a video conference. On 9th of July a local Seminar was organized in Oberwart with mayors from the Region Südburgenland. All stakeholders were informed about the IFIs Tool.

4.2 IT tool adaptation

For Austrians realisation, the first adaptation was difficult to implement - the data on emission factors for the individual energy sources were not available. A conversion into the correct unit was possible with the help of ENVIROS. This meant that the pilot projects could finally be calculated and analysed using the Tool with Austrian data.

5. ASSESSMENT PROCEDURE OF SME's PROJECTS

5.1 Input and output data of the investment assessment

As preparatory activity a user-friendly IT instrument was developed as the final result of an analysis of public investments addressed to Industry low-carbon transition projects and the identification of quality and quantity criteria to be applied for the assessment analysis. The tool focuses on the evaluation of the project's economic parameters and environmental benefits.

Investment/funding related inputs:

- The Total investment
- Type of financing (Loan, Subsidy, Own resources)
- The Interest rate
- The Repay of the loan
- The Discount rate
- The Lifetime of the project/measure

Energy saving related inputs:

- Electricity
- Natural Gas
- Coal
- Heat
- Solid biofuels
- Gaseous biofuels
- Other fuels

Figure outputs

The following figure outputs are obtained from the evaluation of SME's investment project:

- The expected drop of CO2eq emissions
- The expected Cash Flow
- The NPV - Net Present Value
- The simple payback

The equivalent scenario is also calculated that relates to the situation when the project does not use any financial instrument (loan) and the co-financing is secured only by own resources. The NPV of both scenarios is the same, while the cash flow becomes positive sooner in case of the equivalent scenario – as shown in the figures. The investment with this direct investment is completed by the missing subsidy share.

The input and output data of the 8 SME's investment assessment are presented in the attached tables:

5.2. TABLES / IT TOOL CALCULATION RESULTS

Project No. / Name	01		
General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
			x
Type of business activity (*Please tick*)	Production	Services	
		x	
Type of economic activity to which the investment relates	Technical engineering		
Type / subject of investment	*Please tick or indicate % share of energy savings*		
Buildings insulation			
Change of technological processes			
Control of circulation pumps			
Decrease of losses in heat distribution			
Energy management			
Installation of cogeneration units			
Installation of flue gas pre-heaters to boilers			
Installation of frequency inventors			
Installation of heat pumps			
Installation of photovoltaic systems (for electricity generation)	x		
Installation of solar thermal systems (for heat generation)			
Installation/replacement of compressors			
Replacement of coal boiler with biomass boiler			
Replacement of coal boiler with gas boiler			
Replacement of coal boiler with new coal boiler			

Replacement of existing lighting with LED80 or higher efficiency	
Replacement of lighting LED80 with LED110 or higher efficiency	
Thermal insulation of technologies	
Transformers replacement	
Waste heat utilisation	
Other – please indicate type	

Investment / funding related inputs

		In Euro	As % of Total
Investment	Total	295.450	
	Loan	192.043	65
	Own resource	0	0
	Subsidy	103.407	35

Loan	Interest rate (in %)	2
	Repay (in years)	20
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	23

Energy saving related input

Energy type	The value of energy saved	Energy unit	Average cost of the unit of energy in Euro
Electricity	160.240	kWh/ a	4,3 cent/ kWh
Natural gas			
Coal			
Heat			
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data	
Expected drop of CO2 emissions	8.072,54 kg
Expected drop of CH4 emissions	10.760,82 g
Expected drop of N2O emissions	1.386,9 g
Expected drop of CO2eq emissions	8.754,88 kg
Expected Cash Flow	13.373 €/ a
Net Present Value	49.312,15 €
Simple payback *(in years)*	22
Equivalent scenario without loan investment	
Own resources investment in Euro	184.470,17 €
Subsidy share (in %):	38 %

Project No. / Name	02

General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
		x	
Type of business activity (*Please tick*)	Production	Services	
	x		
Type of economic activity to which the investment relates	Manufacturing		
Type / subject of investment	*Please tick or indicate % share of energy savings*		
Buildings insulation			
Change of technological processes			
Control of circulation pumps	x		
Decrease of losses in heat distribution	x		
Energy management			

Installation of cogeneration units	
Installation of flue gas pre-heaters to boilers	
Installation of frequency inventors	
Installation of heat pumps	
Installation of photovoltaic systems (for electricity generation)	x
Installation of solar thermal systems (for heat generation)	
Installation/replacement of compressors	
Replacement of coal boiler with biomass boiler	
Replacement of coal boiler with gas boiler	
Replacement of coal boiler with new coal boiler	
Replacement of existing lighting with LED80 or higher efficiency	
Replacement of lighting LED80 with LED110 or higher efficiency	
Thermal insulation of technologies	
Transformers replacement	
Waste heat utilisation	
Other – please indicate type	

Investment / funding related inputs

		In Euro	As % of Total
Investment	Total	22.000	
	Loan	14.300	65
	Own resource		
	Subsidy	7.700	35

Loan	Interest rate (in %)	3
	Repay (in years)	8
Own resource	Discount rate (in %) (if no data use typical country value)	2,5

Measure	Lifetime/expected payback period in years	23
Energy saving related input		
Energy type	The value of energy saved	Energy unit	Average cost of the unit of energy in Euro
Electricity	14.000	kWh	4,3 cent/ kWh
Natural gas			
Coal			
Heat			
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			
Output data		
Expected drop of CO2 emissions	363,4 kg	
Expected drop of CH4 emissions	484,41 g	
Expected drop of N2O emissions	62,45 g	
Expected drop of CO2eq emissions	394,11 kg	
Expected Cash Flow	602 €	
Net Present Value	4.172,54 €	
Simple payback *(in years)*	37	
Equivalent scenario without loan investment		
Own resources investment in Euro	14.606,48 €	
Subsidy share (in %):	34 %	
Project No. / Name	03	
General investment data		

Enterprise Size (*Please tick*)	Micro	Small	Medium-size
			x
Type of business activity (*Please tick*)	Production	Services	
	x		
Type of economic activity to which the investment relates	Metall processing		
Type / subject of investment	*Please tick or indicate % share of energy savings*		
Buildings insulation			
Change of technological processes	x		
Control of circulation pumps			
Decrease of losses in heat distribution			
Energy management			
Installation of cogeneration units	x		
Installation of flue gas pre-heaters to boilers			
Installation of frequency inventors			
Installation of heat pumps			
Installation of photovoltaic systems (for electricity generation)			
Installation of solar thermal systems (for heat generation)			
Installation/replacement of compressors	x		
Replacement of coal boiler with biomass boiler			
Replacement of coal boiler with gas boiler			
Replacement of coal boiler with new coal boiler			
Replacement of existing lighting with LED80 or higher efficiency			
Replacement of lighting LED80 with LED110 or higher efficiency			
Thermal insulation of technologies			

Transformers replacement	
Waste heat utilisation	x
Other – please indicate type	

Investment / funding related inputs

		In Euro	As % of Total
Investment	Total	100.000	
	Loan	65.000	65
	Own resource		
	Subsidy	35.000	35

Subsidy share (in %):	

Loan	Interest rate (in %)	3,5
	Repay (in years)	20
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	23

Energy saving related input

Energy type	The value of energy saved	Energy unit	Average cost of the unit of energy in Euro
Electricity	100.000	kWh/a	4,3 cent/kWh
Natural gas	60.240	kWh/a	7 cent/kWh
Coal			
Heat	1.000	kWh/a	17 cent/ kWh
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data

Expected drop of CO2 emissions	14.706,1 kg
Expected drop of CH4 emissions	3.715,36 g

Expected drop of N2O emissions	471,7 g
Expected drop of CO2eq emissions	14.939,51 kg
Expected Cash Flow	8.687 €/ a
Net Present Value	79.264,01
Simple payback *(in years)*	12
Equivalent scenario without loan investment	
Own resources investment in Euro	71.296,57 €
Subsidy share (in %):	29 %

Project No. / Name	04		
General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
		x	
Type of business activity (*Please tick*)	Production	Services	
		x	
Type of economic activity to which the investment relates	Engineering bureau		
Type / subject of investment	*Please tick or indicate % share of energy savings*		
Buildings insulation			
Change of technological processes			
Control of circulation pumps	x		
Decrease of losses in heat distribution			
Energy management			
Installation of cogeneration units			
Installation of flue gas pre-heaters to boilers			

Installation of frequency inventors	
Installation of heat pumps	
Installation of photovoltaic systems (for electricity generation)	x
Installation of solar thermal systems (for heat generation)	
Installation/replacement of compressors	
Replacement of coal boiler with biomass boiler	
Replacement of coal boiler with gas boiler	
Replacement of coal boiler with new coal boiler	
Replacement of existing lighting with LED80 or higher efficiency	x
Replacement of lighting LED80 with LED110 or higher efficiency	
Thermal insulation of technologies	
Transformers replacement	
Waste heat utilisation	
Other – please indicate type	

Investment / funding related inputs

		In Euro	As % of Total
Investment	Total	31.500	
	Loan	20.475	65
	Own resource		
	Subsidy	11.025	35

Loan	Interest rate (in %)	3,5
	Repay (in years)	10
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	23

Energy saving related input

Energy type	The value of energy saved	Energy unit	Average cost of the unit of energy in Euro
Electricity	9.000	kWh/a	4,3 cent/kWh
Natural gas	1.000	kWh/a	7 cent/ kWh
Coal			
Heat			
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data	
Expected drop of CO2 emissions	329,74 kg
Expected drop of CH4 emissions	349,83 g
Expected drop of N2O emissions	44,17 g
Expected drop of CO2eq emissions	351,65 kg
Expected Cash Flow	557€/a
Net Present Value	11.551,07 €
Simple payback *(in years)*	56
Equivalent scenario without loan investment	
Own resources investment in Euro	21.205,06 €
Subsidy share (in %):	32 %

Project No. / Name	05

General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
			x

Type of business activity *(Please tick)*	Production	Services
Type of economic activity to which the investment relates	Engineering	
Type / subject of investment	*Please tick or indicate % share of energy savings*	
Buildings insulation		
Change of technological processes		
Control of circulation pumps	x	
Decrease of losses in heat distribution		
Energy management		
Installation of cogeneration units		
Installation of flue gas pre-heaters to boilers		
Installation of frequency inventors		
Installation of heat pumps		
Installation of photovoltaic systems (for electricity generation)	x	
Installation of solar thermal systems (for heat generation)		
Installation/replacement of compressors		
Replacement of coal boiler with biomass boiler		
Replacement of coal boiler with gas boiler		
Replacement of coal boiler with new coal boiler		
Replacement of existing lighting with LED80 or higher efficiency		
Replacement of lighting LED80 with LED110 or higher efficiency	x	
Thermal insulation of technologies		
Transformers replacement		
Waste heat utilisation		

Other – please indicate type	

Investment / funding related inputs

Investment		In Euro	As % of Total
	Total	250.700	100
	Loan	137.885	55
	Own resource	25.070	10
	Subsidy	87.745	35

Loan	Interest rate (in %)	2
	Repay (in years)	20
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	19

Energy saving related input

Energy type	The value of energy saved	Energy unit	verage cost of the unit of energy in Euro
Electricity	173.250	kWh/a	4,3 cent/ kWh
Natural gas			
Coal			
Heat			
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data

Expected drop of CO2 emissions	6.440,7 kg
Expected drop of CH4 emissions	6.100,5 kg
Expected drop of N2O emissions	760,82 g
Expected drop of CO2eq emissions	6.819,93 kg

Expected Cash Flow	10.968€ / a
Net Present Value	12.902,33 €
Simple payback *(in years)*	23
Equivalent scenario without loan investment	
Own resources investment in Euro	151.380,91 €
Subsidy share (in %):	40 %

Project No. / Name	06		
General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
			x
Type of business activity (*Please tick*)	Production	Services	
Type of economic activity to which the investment relates	Manufacturing		
Type / subject of investment	*Please tick or indicate % share of energy savings*		
Buildings insulation			
Change of technological processes			
Control of circulation pumps			
Decrease of losses in heat distribution			
Energy management			
Installation of cogeneration units	x		
Installation of flue gas pre-heaters to boilers			
Installation of frequency inventors			
Installation of heat pumps	x		

Installation of photovoltaic systems (for electricity generation)	x
Installation of solar thermal systems (for heat generation)	
Installation/replacement of compressors	
Replacement of coal boiler with biomass boiler	
Replacement of coal boiler with gas boiler	
Replacement of coal boiler with new coal boiler	
Replacement of existing lighting with LED80 or higher efficiency	x
Replacement of lighting LED80 with LED110 or higher efficiency	
Thermal insulation of technologies	
Transformers replacement	
Waste heat utilisation	
Other - please indicate type	

Investment / funding related inputs

Investment		In Euro	As % of Total
	Total	284.400	100
	Loan	156.420	55
	Own resource	28.440	10
	Subsidy	99.540	35

Loan	Interest rate (in %)	3
	Repay (in years)	25
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	19

Energy saving related input

Energy type	The value of energy saved	Energy unit	Average cost of the unit of energy in Euro
Electricity	89.200	kWh/a	4,3 cent/ kWh
Natural gas			
Coal			
Heat	74.900	kWh/ a	17 cent/ kWh
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data	
Expected drop of CO2 emissions	9.515,18 kg
Expected drop of CH4 emissions	5.964,37 g
Expected drop of N2O emissions	699,8 g
Expected drop of CO2eq emissions	9.872,85 kg
Expected Cash Flow	16.569 €/a
Net Present Value	85.185,86 €
Simple payback *(in years)*	17
Equivalent scenario without loan investment	
Own resources investment in Euro	162.993,40 €
Subsidy share (in %):	43 %

Project No. / Name	07

General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
			x
Type of business activity	Production	Services	

(Please tick)		
Type of economic activity to which the investment relates	Civil Engineering	
Type / subject of investment	*Please tick or indicate % share of energy savings*	
Buildings insulation	x	
Change of technological processes		
Control of circulation pumps		
Decrease of losses in heat distribution		
Energy management		
Installation of cogeneration units		
Installation of flue gas pre-heaters to boilers		
Installation of frequency inventors		
Installation of heat pumps		
Installation of photovoltaic systems (for electricity generation)	x	
Installation of solar thermal systems (for heat generation)	x	
Installation/replacement of compressors		
Replacement of coal boiler with biomass boiler		
Replacement of coal boiler with gas boiler		
Replacement of coal boiler with new coal boiler		
Replacement of existing lighting with LED80 or higher efficiency	x	
Replacement of lighting LED80 with LED110 or higher efficiency		
Thermal insulation of technologies		
Transformers replacement		
Waste heat utilisation		
Other – please indicate type		

Investment / funding related inputs			
Investment		In Euro	As % of Total
	Total	208.200	100
	Loan	135.330	65
	Own resource		
	Subsidy	72.870	35

Loan	Interest rate (in %)	3
	Repay (in years)	20
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	21

Energy saving related input			
Energy type	The value of energy saved	Energy unit	verage cost of the unit of energy in Euro
Electricity	82.400	kWh/ a	4,3 cent/ KWh
Natural gas			
Coal			
Heat	63.400	kWh/ a	17 cent/ kWh
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data	
Expected drop of CO2 emissions	8.233,22 kg
Expected drop of CH4 emissions	5.287,2 g
Expected drop of N2O emissions	623,15 g
Expected drop of CO2eq emissions	8.551,11 kg
Expected Cash Flow	14.321 €/a

Net Present Value	89.978,43 €
Simple payback *(in years)*	15
Equivalent scenario without loan investment	
Own resources investment in Euro	141.803,72 €
Subsidy share (in %):	32%

Project No. / Name	08		
General investment data			
Enterprise Size (*Please tick*)	Micro	Small	Medium-size
			x
Type of business activity (*Please tick*)	Production	Services	
	x		
Type of economic activity to which the investment relates	Food-processing		
Type / subject of investment	*Please tick or indicate % share of energy savings*		
Buildings insulation			
Change of technological processes			
Control of circulation pumps			
Decrease of losses in heat distribution			
Energy management			
Installation of cogeneration units			
Installation of flue gas pre-heaters to boilers			
Installation of frequency inventors			
Installation of heat pumps			
Installation of photovoltaic systems (for electricity generation)	x		

Installation of solar thermal systems (for heat generation)	
Installation/replacement of compressors	
Replacement of coal boiler with biomass boiler	
Replacement of coal boiler with gas boiler	
Replacement of coal boiler with new coal boiler	
Replacement of existing lighting with LED80 or higher efficiency	
Replacement of lighting LED80 with LED110 or higher efficiency	
Thermal insulation of technologies	
Transformers replacement	
Waste heat utilisation	
Other – please indicate type	

Investment / funding related inputs

Investment		In Euro	As % of Total
	Total	85.000	
	Loan	46.750	55
	Own resource	8.500	10
	Subsidy	29.750	35

Loan	Interest rate (in %)	3
	Repay (in years)	20
Own resource	Discount rate (in %) (if no data use typical country value)	2,5
Measure	Lifetime/expected payback period in years	21

Energy saving related input

Energy type	The value of energy saved	Energy unit	Average cost of the unit of energy in Euro
Electricity	95.000	kWh/ a	4,3 cent/ kWh

Natural gas			
Coal			
Heat			
Solid biofuels			
Gaseous biofuels			
Other (indicate type)			

Output data	
Expected drop of CO2 emissions	5.231,23 kg
Expected drop of CH4 emissions	8.516,05 g
Expected drop of N2O emissions	1.097,12 g
Expected drop of CO2eq emissions	5.791,07 kg
Expected Cash Flow	4.085 €/ a
Net Present Value	-279,09 €
Simple payback *(in years)*	21
Equivalent scenario without loan investment	
Own resources investment in Euro	66.392,97 €
Subsidy share (in %):	22%

Annex: Tool – Description of inputs and outputs

Investment/funding related inputs:

- The Total refers to the total investment in the project, including each funding share (Loan, Subsidy, Own resources).
- The Loan is the share of the loan funding on the total investment
- The Subsidy is the share of the subsidy funding on the total investment
- The Own resources is the share of own funding by the project beneficiary on the total investment
- The Interest rate is the rate linked to the loan share
- The Repay is the period length to repay the loan
- The Discount rate refers to the rate used for the discount factor on cash flow, in order to estimate the NPV
- The Lifetime is the expected lifetime of the project

Energy saving related inputs:

- Electricity
- Natural Gas
- Coal
- Heat
- Solid biofuels
- Gaseous biofuels
- Other fuels

Figure outputs

The following figure outputs are obtained from the evaluation of SME's investment project:

- The expected drop of CO2eq emissions is the sum of CO2, CH4 and N2O emissions
- The expected Cash Flow is calculated based on the energy savings and the energy cost inputs
- The NPV is the Net Present Value calculated for the project funding mechanism
- The simple payback is the total investment divided by the Cash Flow
- The equivalent scenario: Subsidy share is a theoretical share of subsidy that would be needed in case of implementation of the equivalent scenario (without loan) to keep the same NPV of the project.

- The equivalent scenario: Own resources is the share of own funding by the project beneficiary in case of the equivalent scenario.