Promotional video

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Webinar 1

The SCOoPE project

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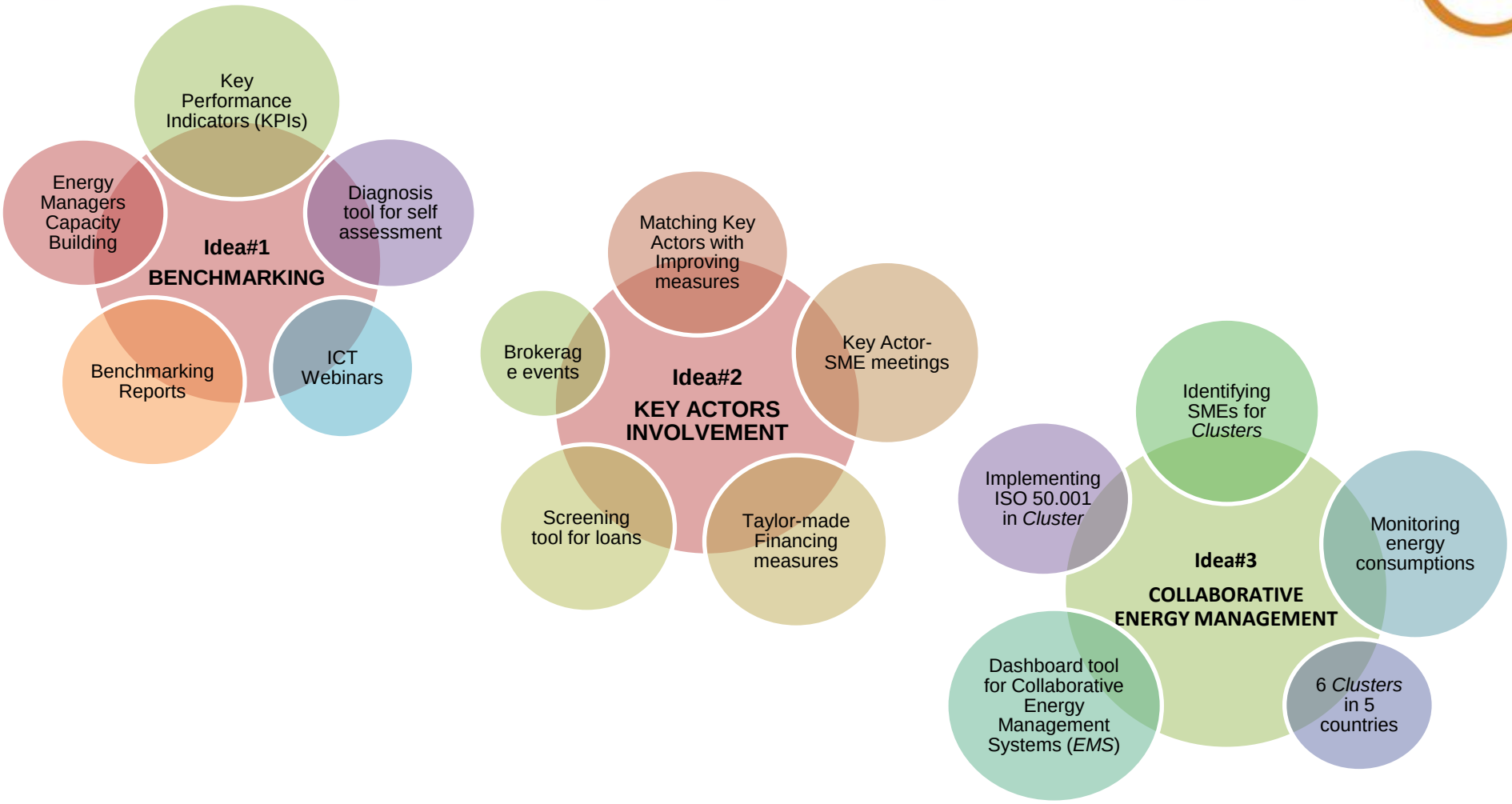

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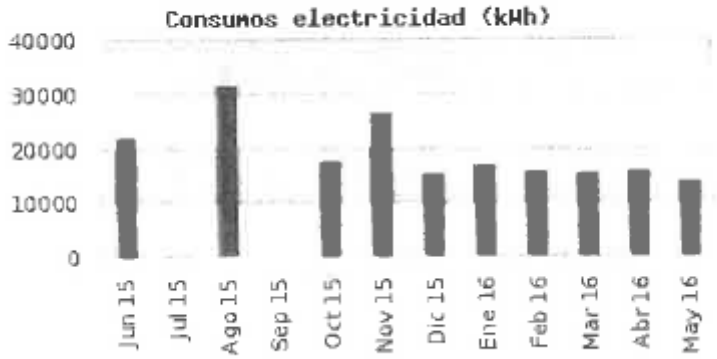
Término de Energía	
Punta 3604 kWh * 0,150943 €/kWh	544,00 €
Llano 8541 kWh * 0,122191 €/kWh	1.043,63 €
Valle 1631 kWh * 0,096018 €/kWh	156,61 €
Descuento en energía 10,00% sobre (1.744,24 €)	-174,42 €

HISTORIAL DE CONSUMO



Importe IVA	
Base imponible: 2.338,95 € IVA aplicado: 21%	491,18€
IMPORTE TOTAL	**2.830,13 €**

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also be achieved by introducing new affordable intelligent energy solutions that secure more uptime in production chains.

Scope: Activities should focus on removing market barriers, in particular the lack of expertise and information on energy management. Proposals should primarily address the uptake of cross-cutting innovative technologies, such as energy efficient electric motor driven systems and steam/hot water generation, because these represent 75% of the potential savings in industry[49]. They should also consider total-site energy management schemes and system optimization methodologies to identify saving potentials, monitor progress, and design energy recovery and energy storage solutions. Proposals should put in place mechanisms to secure funding for energy efficiency investments and facilitate the continuation of the activities beyond the project lifetime. The use of renewable energies and waste heat recovery should be encouraged where it is cost-effective. Energy-intensive industries should be prioritised as they account for 70% of industrial energy use. Processes (e.g. drying) which represent a relatively high share of energy consumption in industry should also be considered where appropriate.

The following areas or their combination can also be funded:

- *Industrial systems efficiency benchmarking*: Devise methods and tools including ICT to compare and benchmark the energy performance of industrial systems and processes, and develop guidelines for tailored measures, in particular in energy-intensive industries. Such methods and tools should be based on existing standards where applicable.
- *Development of sector-specific technology pathways* towards 2050 to target the most energy-intensive industrial sectors
- *Energy management in SMEs and industry*: Improve the availability of skilled energy auditors and energy managers and the diffusion of energy management systems and best practices. Develop instruments to ensure the availability of updated, comprehensive and usable information on energy efficiency for industries. Address the issue of access to finance for the actual implementation of energy efficiency upgrades.
- *Human and organizational challenges*: Analysis of motivations, behaviour, perception, and barriers for the involved actors (from decision makers to employees)

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relation of electric and thermal in primary energy consumption is 67%-33%

- ✓ The businesses dealing with "Dairy products" have an average annual energy consumption of 9,39 GWh (yellow points in the map) and the project will involve 12 industries belonging to this sector. The relation of electric and thermal in primary energy consumption is 60%-40%
- ✓ The businesses dealing with "Transformation of fruit and vegetables" have an average annual energy consumption of 4,58 GWh (red points in the map) and the project will involve 12 industries belonging to this sector. The relation of electric and thermal in primary energy consumption is 70%-30%

The **total current consumption faced by this project** (and almost guaranteed by the businesses already involved) is expected to reach **850 GWh** of primary energy. Thus, applying the aforementioned 10% of net saving 85 GWh of primary energy are expected to be saved.

Applying the weighted relations between thermal and electric consumption, it is expected that those 85 GWh were made from 44.2 GWh of primary energy for electric uses and 40.8 GWh of primary energy for thermal uses.

Applying the mentioned ratios of relationship between electric and thermal savings

44.2 GWh*1 €/5 kWh of electric primary energy. Then 8.84 M€

40.8 GWh*1 €/2 kWh of thermal primary energy. Then 20.4 M€

85 GWh of yearly savings in primary energy.
29.24 M€ of investments mobilisation

Field of delivery	Project Performance Indicator	Quantification	Measurement unit
Preparing the ground for investments	Cumulative Investments made by European stakeholders in sustainable energy	29.24	Million €
Building capacities and skills	Market stakeholders with increased skills/capability/ competencies on energy issues	**43** professionals trained benchmarking process and in use of devices in **7** different real industrial sites. **81** managers of businesses changing their energy behaviour. **420** businesses and **700** people informed of results through **28** Brokerage events. **300** people certified as SCOoPE energy managers.	Number of people with increased capacity

Project Performance Indicator:	Quantification	Measurement unit
Energy savings triggered by the project within its duration	**85**	Primary energy savings triggered (GWh/year)

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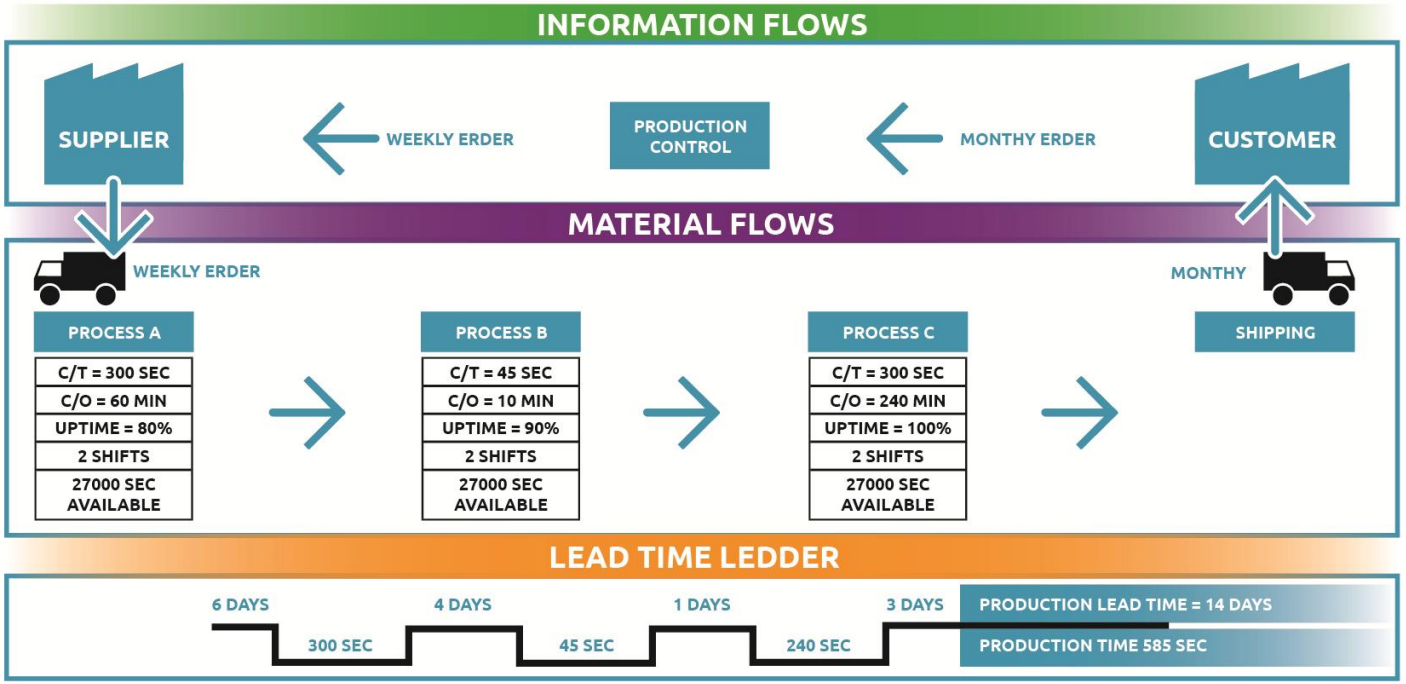
Idea #1 BENCHMARKING



Schematic representation of Current Value Strema Map following **Lean&Green** methodology

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DAIRY sector:

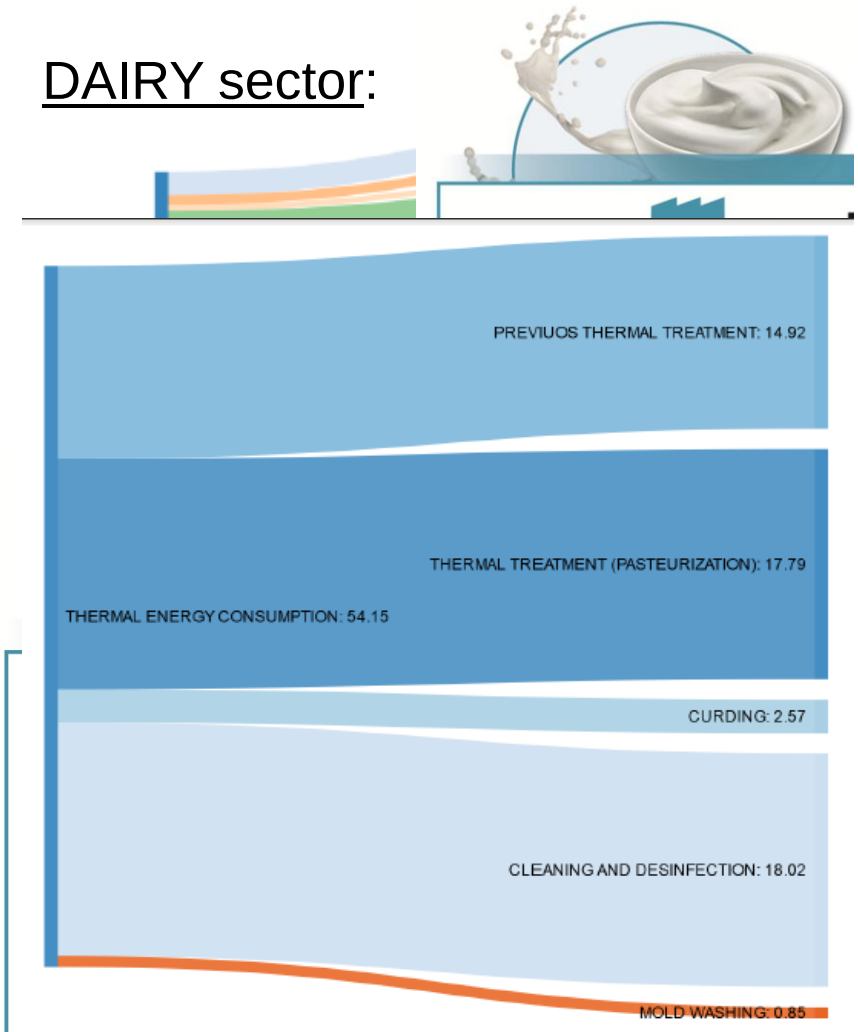
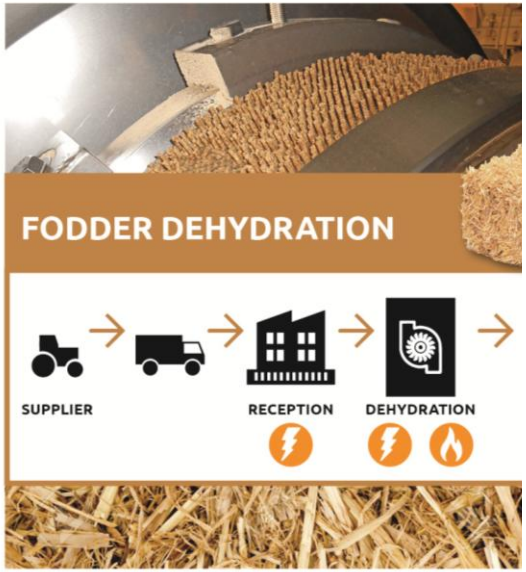


FIGURE 37: SANKEY DIAGRAM THERMAL ENERGY CONSUMPTION FOR A CHEESE PRODUCING PLANT. OPTIMISTIC SCENARIO.

from the European Union's

DRYING sector:



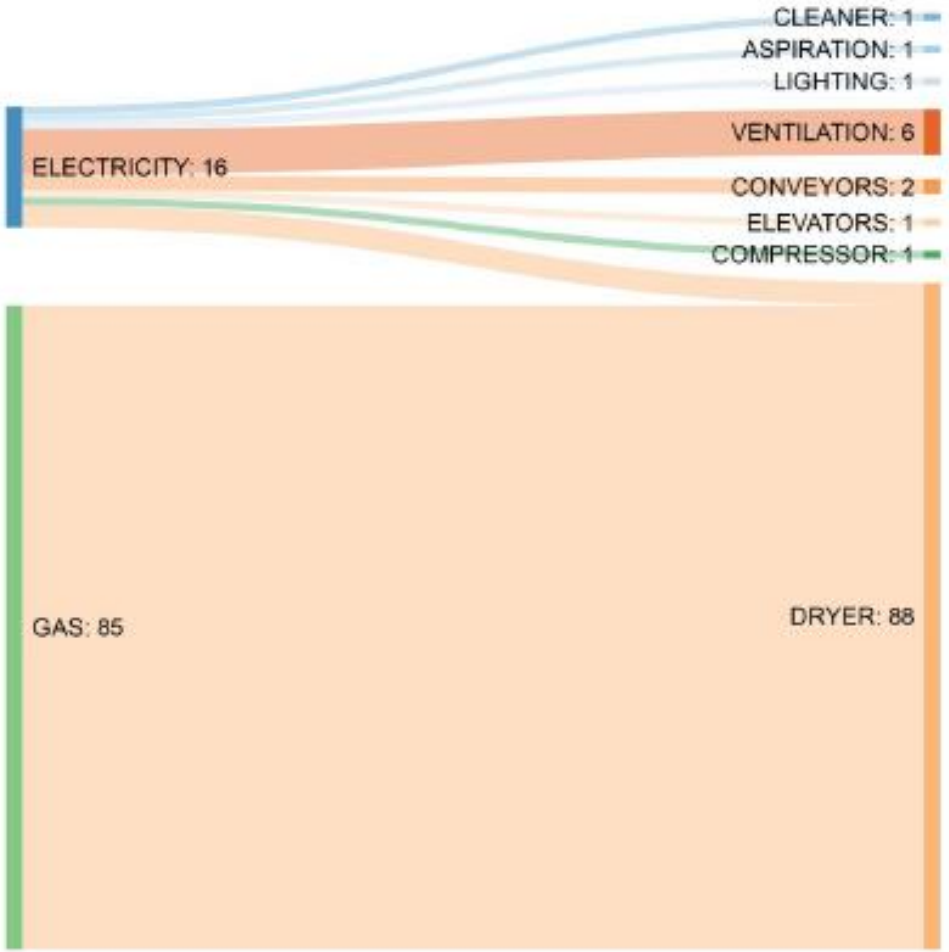


Figure 5 : Sankey Diagramm in percentage of Energy consumption – Winter cereals drying

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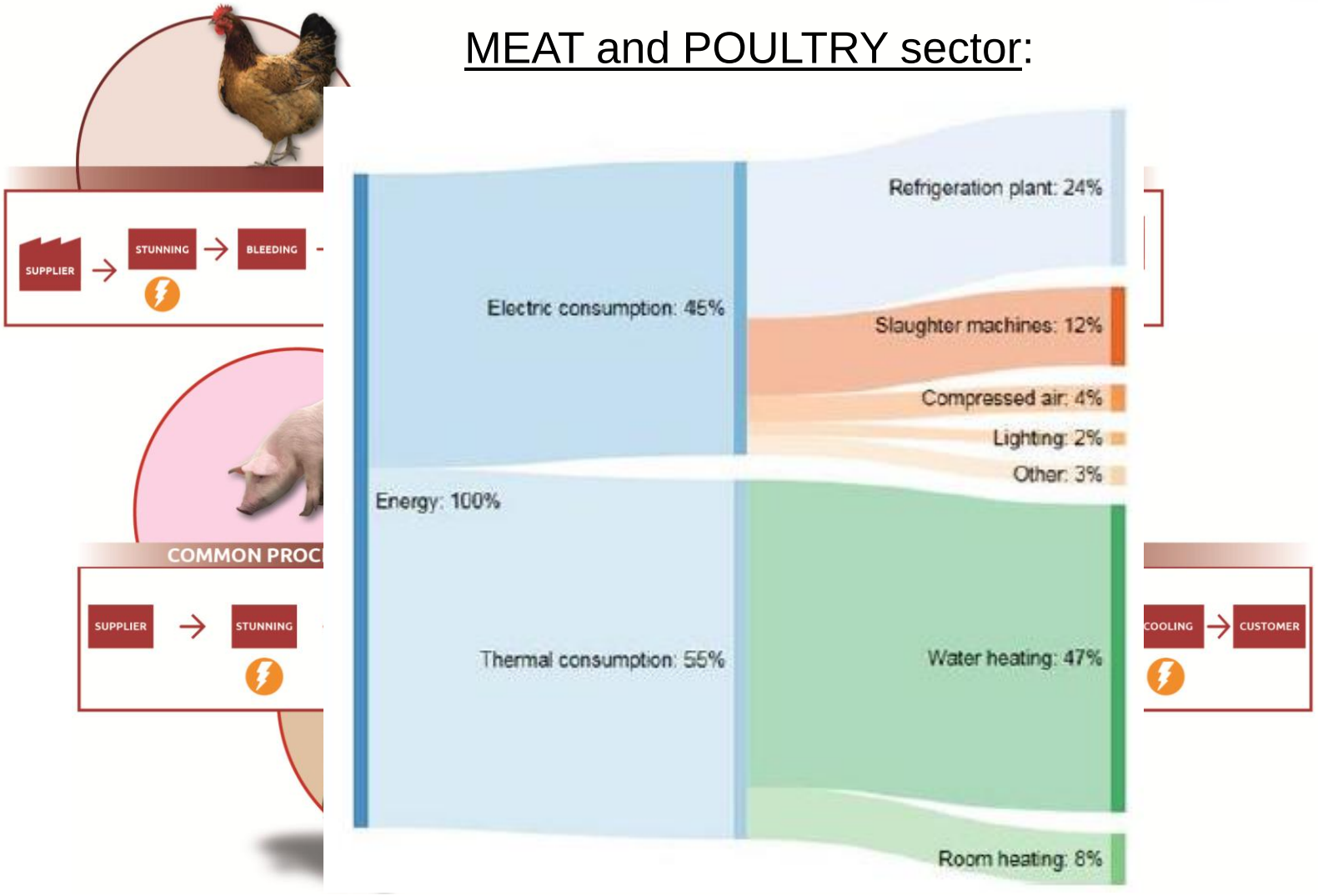
MEAT and POULTRY sector:



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FRUIT and VEGETABLES sector:

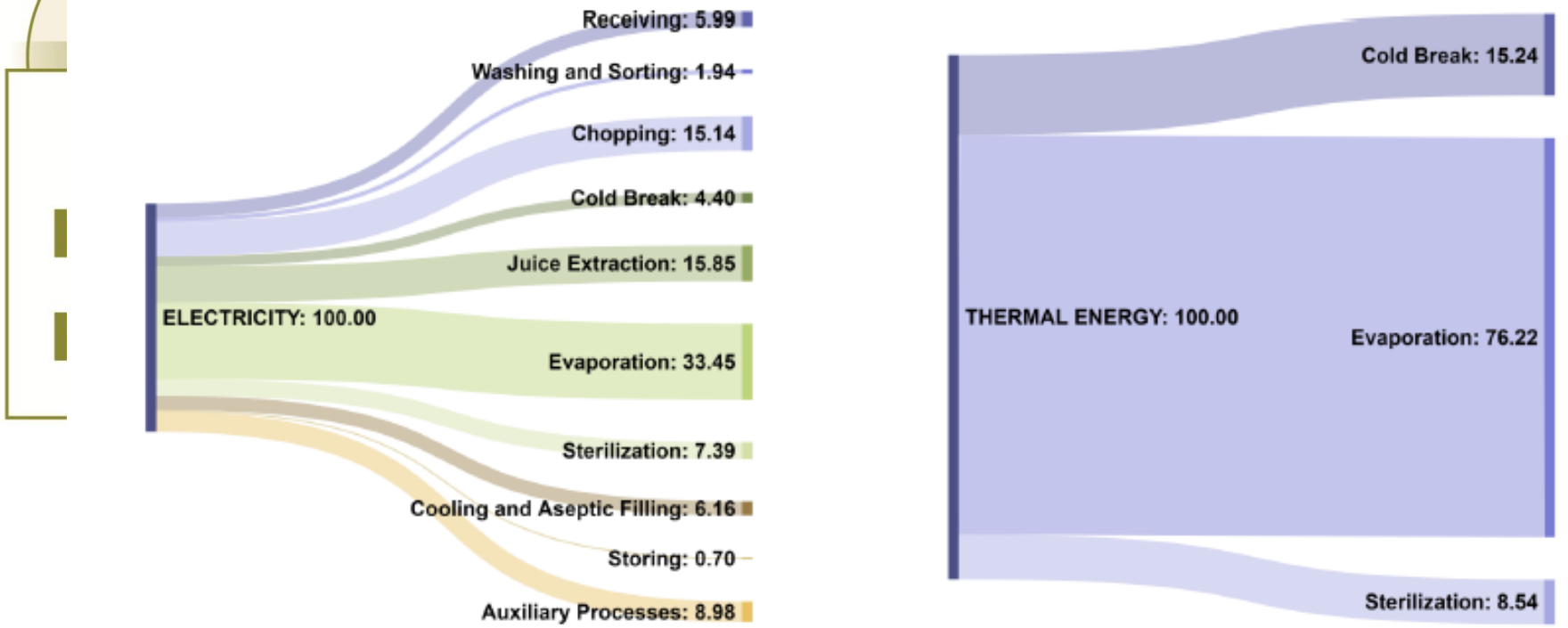

FIGURE 11: AVERAGE CONSUMPTION FLOWS OF ELECTRICITY ON THE LEFT AND THERMAL ENERGY ON THE RIGHT IN THE PRODUCTION OF TOMATO CONCENTRATE (DATA ELEABORATION FROM SPECIFIC ENERGY AUDIT INFORMATION).

Fruit pureés

Tomato concentrate

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SCOOPE Saving Cooperative Energy

2.1. Thermal average KPI-1: Average thermal energy consumption in *kWh/t* for generation of thermal utilities (steam and water) in dairy industries.

INDICATOR	Thermal average KPI-1: Average thermal energy consumption in kWh/t for generation of thermal utilities (steam and water) in dairy industries.			
Sector (NACE code)	10.5	**Subsector**	Dairy	
Level of indicator	Industry level (utilities)			
	Energy in dairy plants directly refers to the utility's generation and consumption such as steam, refrigeration, electricity and water. Steam and water are used as heat exchanger in dairy operations. Water consumption is very high in most of the dairy operations.			
Thermal or electrical process	Thermal processes			
Energy source	Gas			
Description of the indicator	This indicator refers to the average total thermal energy required for generation of utilities (steam and water) used by a dairy processing industry.			
Upper level	---			
Lower level	Product level (white milk, yoghurt, cured cheese, butter)			
Associated variables	**Unit**	*kWh/t* (kilowatt hour thermal energy per tonne of raw milk entering in the processing line)	**Name**	T aKPI L1 N3
	Average total thermal energy consumption is related to the tonnes of obtained final product.			
Best or average KPI	Average		**KPI Value**	37,27 *kWh/t* 37270 *kWh/kg*
Source	Siemens			

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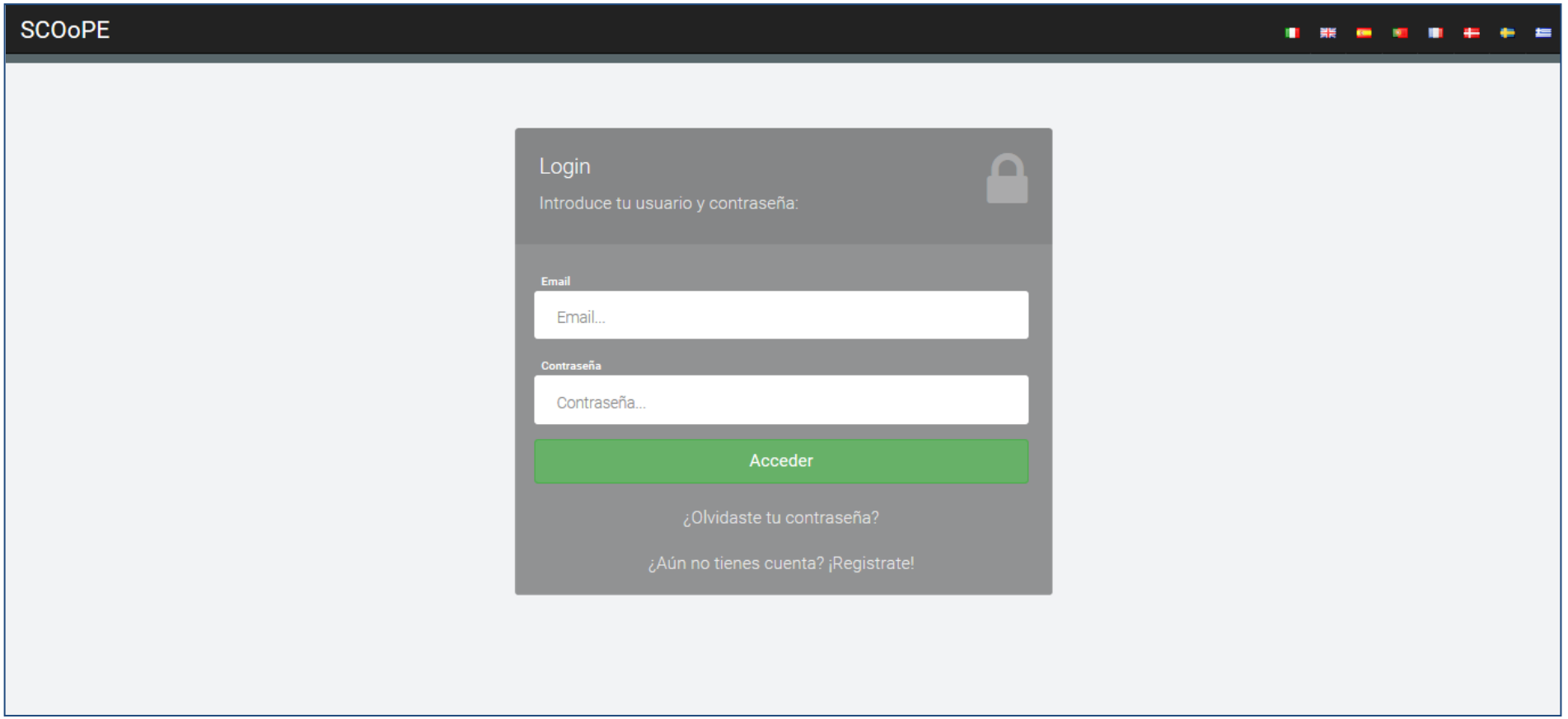
Diagnosis tool

https://diagnosistool.scoope.eu/



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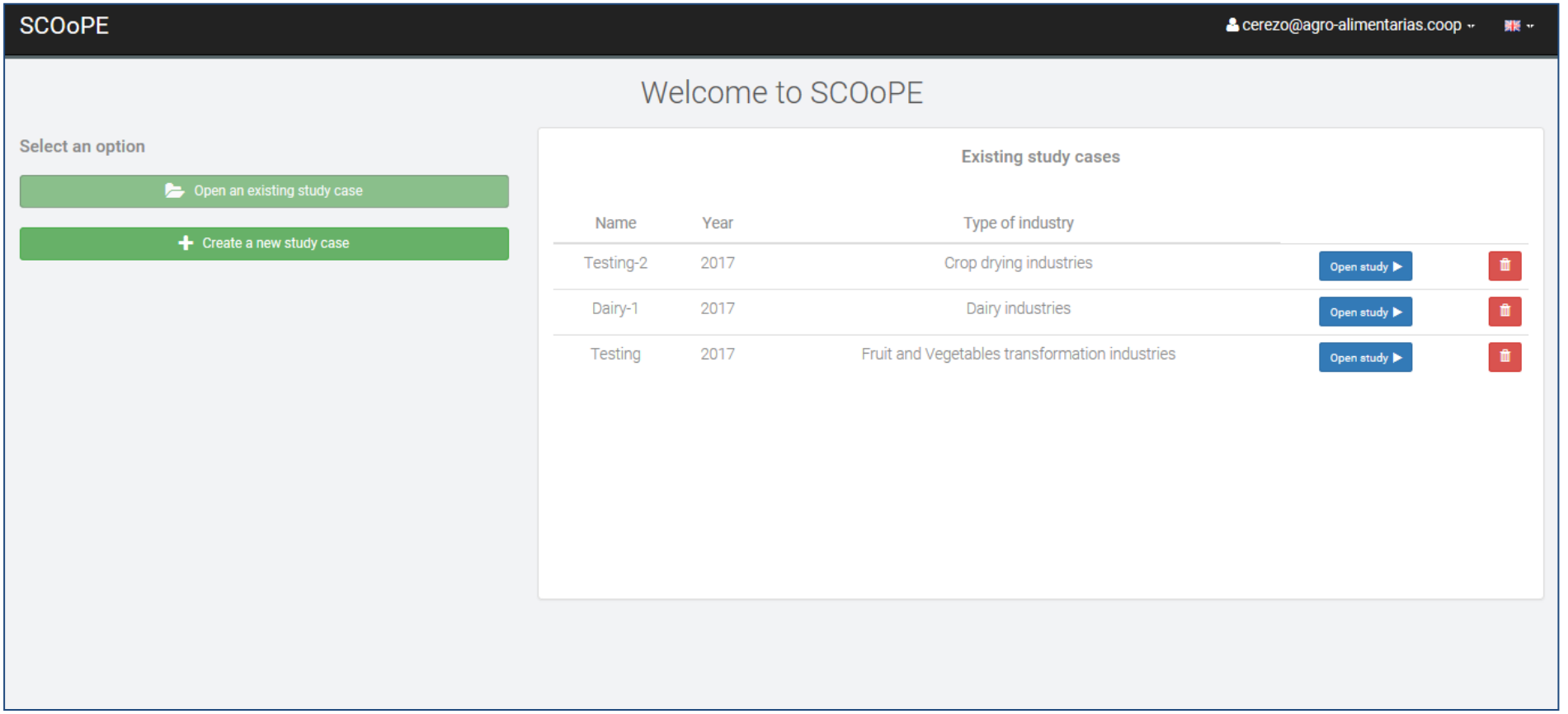
Diagnosis tool



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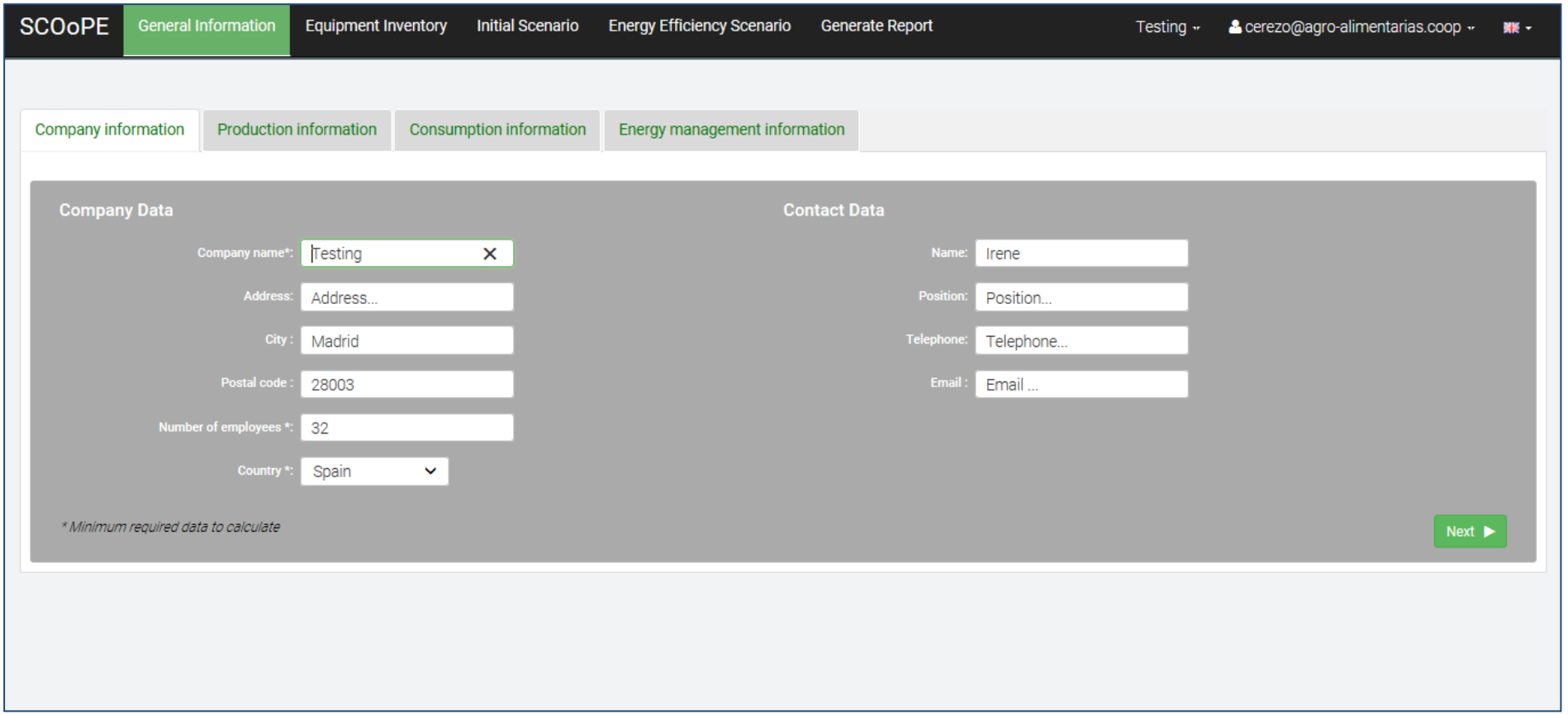
Diagnosis tool



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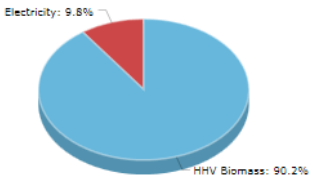
Diagnosis tool

SCOoPE | General Information | Equipment Inventory | Initial Scenario | Energy Efficiency Scenario | Generate Report

Energy	Consumption (kWh/year)
HHV Biomass	1,660,900
LHV Biomass	0
Diesel	0
Electricity	181,360
Gas	0
LPG	0
Cogeneration	0
District Heating	0
TOTAL:	**1,842,260**

CO2 emissions (ton CO2/year): 94

Consumption distribution by type of energy

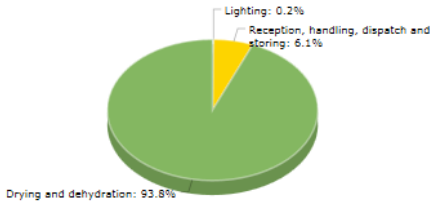


Energy KPI: 2.69 kWh/kg evaporated water
Average range KPI: 1.00 - 1.43 kWh/kg evaporated water
Costs KPI: 0.13 €/kg evaporated water
Emissions KPI: 0.14 kg CO2/kg evaporated water

Energy consumption by processes | Energy consumption by systems | Global energy KPIs | Electrical energy KPIs | Thermal energy KPIs

Process	Consumption (kWh/year)
Lighting	3,271
Reception, handling, dispatch and storing	111,671
Drying and dehydration	1,727,318

Consumption distribution by processes



◀ Equipment inventory

Final Scenario ▶

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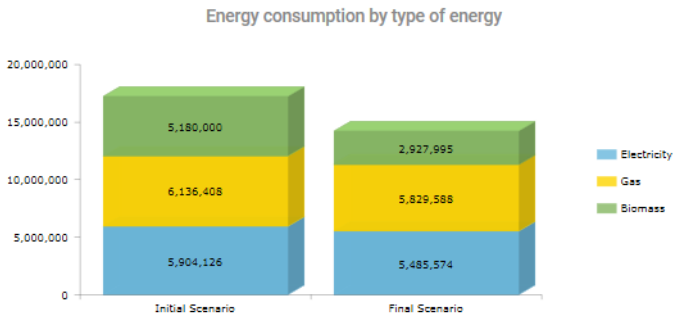
Diagnosis tool

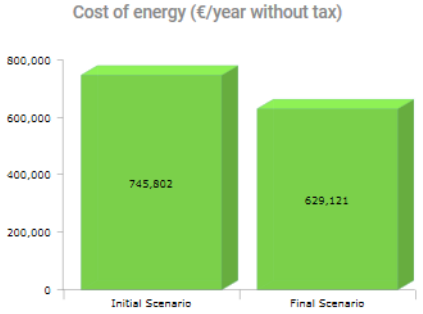
SCOoPE | General Information | Equipment Inventory | Initial Scenario | Energy Efficiency Scenario | Generate Report

Proposed measures | Results | Indicators

Results after applyment of measures

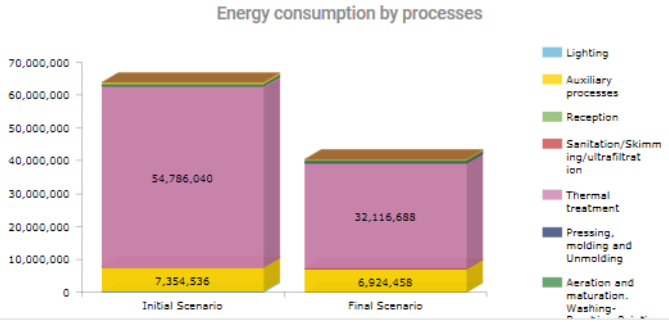
Energy	Initial consumption (kWh/year)	Energy saving (%)	Final consumption (kWh/year)
Electricity	5,904,126	7.09	5,485,574
Gas	6,136,408	5	5,829,588
Biomass	5,180,000	43.48	2,927,995
TOTAL:	**17,220,534**	**17.29**	**14,243,157**

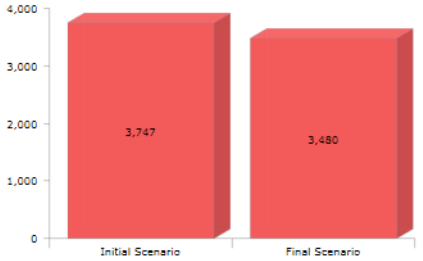




Results by process | Results by system

Process	Initial consumption (kWh/year)	Energy saving (%)	Final consumption (kWh/year)
Lighting	199,837	35.52	128,850
Auxiliary processes	7,354,536	5.85	6,924,458
Reception	19,403	5	18,433
Sanitation/Skimming/ultrafiltration	174,885	5	166,141
Thermal treatment (Pasteurization and cooling)	54,786,040	41.38	32,116,688
Pressing, molding and Unmolding (curding vat filling). Salting	246,760	5	234,422
Aeration and maturation. Washing-Brushing-Painting	532,100	5	505,495





◄ Initial Scenario

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Idea #2 KEY ACTORS involvement

Schneider Electric

ABB

weg

EMERSON Climate Technologies

COOPERFIDI ITALIA

SIEMENS

cajamar CAJA RURAL

ΤΡΑΠΕΖΑ ΠΕΙΡΑΙΩΣ

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Highest EER with oil-free chillers

Sector:

Process: Cooling

Energy concerned: Electricity

Process share in total consumption: Undetermined

Country: Spain

Functional need:

Refrigeration needs are present at almost any subsector in the Food&Beverage industry. In most cases, usage degrees are very high with chillers operating many hours every day, month or year. In this situation, ensuring the highest feasible EER, could bring savings and the best competitive framework.

State of the art:

There are many chillers in the market, with high EER, due to the logical increase in efficiency, gained the last years. But in some cases, the high usage degree justify choose superior chillers that are unknown yet.

Description of the solution:

Awarding the German Industry Innovation Award in 2003, and evolving since then, have positioned Quantum chillers as one of the best in EER achieved (specially at part load). Main features are: turbo compressor (chiller with minimal internal losses, noise emissions and vibrations thanks to magnetic bearings), oil-free design (no components required for oil return, higher EER since heat transfer in refrigeration circuits is not impaired by oil. In fact, ASHRAE evaluate the loss in performance efficiency on refrigeration machines due to oil migration to heat exchanger), frequency converter on every compressor and open flash economizer (increased EER values, specially in case of high differences between cooling and heating medium).

Factors of applicability:

The best sites where this solution can be installed are:
- Sites with a high usage degree of their chillers, in order to get a reduced ROI

Providers:

Company	Mode	Comments
ENGIE	Quantum (models X, G, W, P)	Water cooled. Chilled water (+3° to +15°) or ethylene glycol (-5° to +2°). From 300 kW to 8000kW
ENGIE	Quantum (models A, QA, S, QS)	Air cooled. Chilled water (+3° to +15°). From 300kW to 2800kW

Energy savings: Up to 50%

Total energy savings: Up to 50%

Investment: Undetermined

Co-funded by the Horizon 20
Horizon 2020 research and in

Key Actors – Financial support

D.5.4. Screening Tool.xlsx

Investment Assessment

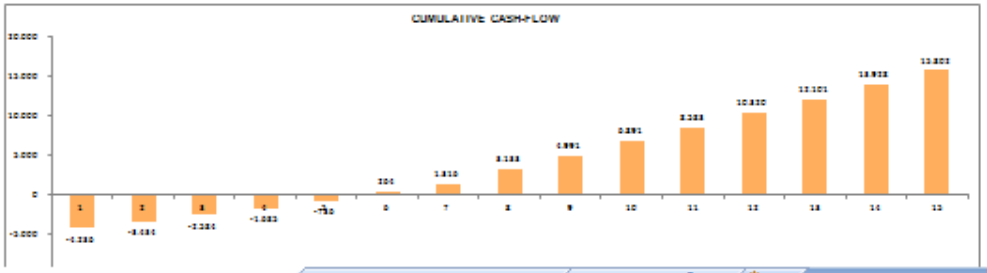
INITIAL DATA [Click for additional help]					
24.555	Annual energy savings or energy generated [MWh]	5.384	Investment [€]		
8,856	Energy costs [€/MWh]	2,5%	Interest rate [%]		
2,5%	Energy CPI [%]	7	Years of the loan [years]	742,3	Payment to bank [€/year]
2,0%	CPI [%]	0	Subsidy [€]		
255,45	Operation and Maintenance cost [€]	50%	Own capital [%]		
10	Depreciation [years]	50%	External capital [%]		
5%	Discount rate [%]	25%	Corporate Tax [%]		

	YEARS																								
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Savings or benefits from selling power back to the grid		2.848	2.893	2.452	2.286	2.264	2.547	2.375	2.495	2.495	2.558	2.622	2.687	2.755	2.823	2.894	2.966	3.041	3.117	3.194	3.274	3.356	3.440	3.526	3.614	3.705
Operation and Maintenance cost		255	385	512	518	524	531	537	544	551	558	565	572	580	587	595	483	411	413	428	436	445	454	463	472	482
Gross Income [EBITDA]		1.745	1.754	1.848	1.888	1.937	1.987	2.038	2.051	2.145	2.288	2.257	2.315	2.375	2.435	2.499	2.563	2.629	2.697	2.767	2.838	2.911	2.986	3.063	3.142	3.223
Depreciation		538	538	538	538	538	538	538	538	538	538	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subsidies	0																									
Operating Income [EBIT]	0	751	756	842	858	933	985	1.848	1.855	1.147	1.282	2.257	2.315	2.375	2.435	2.499	2.563	2.629	2.697	2.767	2.838	2.911	2.986	3.063	3.142	3.223
Interests		125	107	89	71	53	35	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pretax Income	0	626	649	753	848	885	953	1.822	1.855	1.147	1.282	2.257	2.315	2.375	2.435	2.499	2.563	2.629	2.697	2.767	2.838	2.911	2.986	3.063	3.142	3.223
Taxes		156	172	188	205	221	238	256	279	287	308	564	579	594	609	625	641	657	674	692	710	728	747	766	786	806
Net Income	0	469	547	565	644	664	715	767	843	860	961	1.693	1.736	1.781	1.827	1.874	1.923	1.972	2.023	2.075	2.129	2.183	2.240	2.297	2.357	2.417
Depreciation		538	538	538	538	538	538	538	538	538	538	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pay out	4.994	749	749	749	749	749	749	749	749	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash-flow	-4.994	755	882	858	893	949	1.088	1.852	1.848	1.858	1.988	1.693	1.736	1.781	1.827	1.874	1.923	1.972	2.023	2.075	2.129	2.183	2.240	2.297	2.357	2.417
Cash-flow cumulative	-4.994	-4.236	-3.454	-2.596	-1.695	-736	264	1.916	3.199	4.994	6.851	8.583	10.320	12.101	13.928	15.802	17.724	19.697	21.719	23.795	25.923	28.107	30.345	32.644	35.000	37.417

15 YEARS	
IRR	28,28%
NPV	8.486
Payback	5

20 YEARS	
IRR	24,56%
NPV	12.691
Payback	5

25 YEARS	
IRR	22,81%
NPV	16.495
Payback	5



Investment assessment | Investor assessment | Contact info

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Key Actors – Financial support

D.5.4. Screening Tool.xlsx

Investor Assessment

Co-funded by the Intelligent Energy Europe Programme of the European Union

General assessment:

The financial entities consulted consider the following ratios as most relevant ones for analysis of businesses.
Since some ones do not fit with cooperative businesses characteristics, it should be complementaryly used with the below ones.

Financial Autonomy Ratio

☐ Does the cooperative meet this criteria?

This ratio should over or around 20%. It means that the capital represents at least a 20% of the total of liabilities of the company. It is calculated using the following formula: [(Equity of the company/Total of liabilities)x100

General Overview

EBITDA

☐ Does the cooperative meet this criteria?

EBITDA refers to the company's earnings before interests, taxes, depreciations and amortizations. Is it positive in this company? Has it been positive in the last four years?

EBITDA Margin

Investment assessment | Investor assessment | Contact info

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00. BACKGROUND AND ACCESS TO INFORMATION

	Concept	Comments
☐	Energy audit -before SCOoPE	(DATE/PERIOD) Ex: The only one was made ten years ago, in 2007.
☐	Energy invoices	(PERIOD) Ex: Access to 12 last months of electric and gasoil invoices from 2016-01 to 2016-12.
☐	In-situ measurements	(EQUIPMENT for the MEASUREMENTS; PERIOD; MEASURED EQUIPMENT) Ex: Using Grid Analyzers. One day measures in May; mills and main motors
☐	Info from Key Actors	(KEY ACTOR; SOURCE) Ex: Request to SIEMENS about VSD in the market, prices and availability or information from catalog of the provider.

ANNEXES to this Executive Report

1	Previous Audit Report	5 etc...
2	Report from Diagnosis Tool	
3	Data from Grid Analyzer Measurements	
4	Commercial Information	

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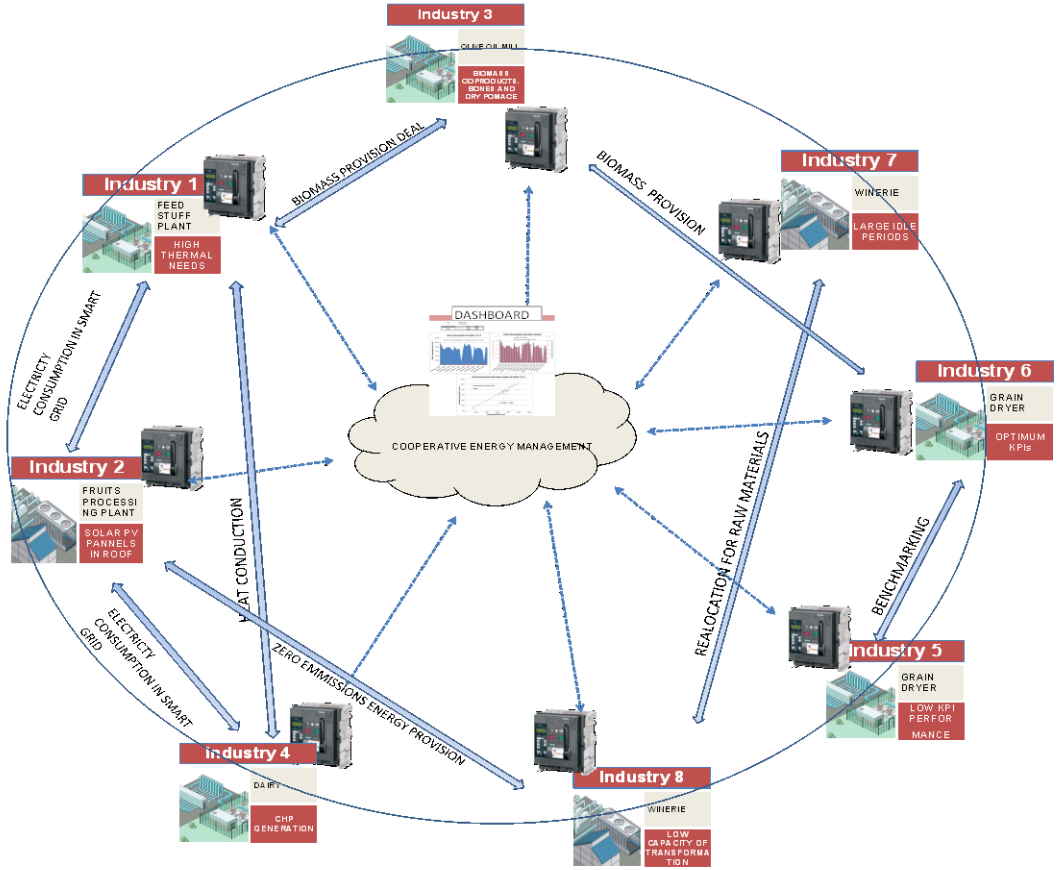
Idea #3 Collaborative Energy Management



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DASHBOARD

SCOOPE Saving Cooperative Energy

ACCES BY SECTOR

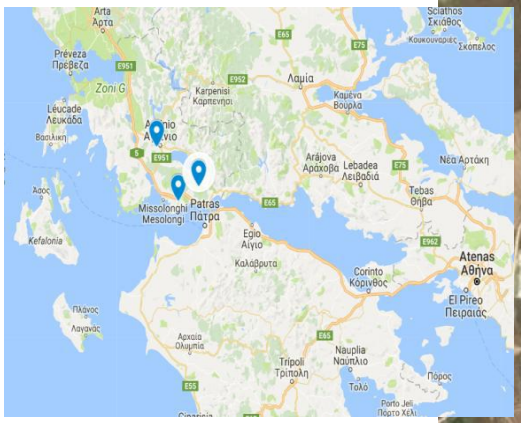
Animal Feed | Dairy Products | Crops Drying | Meat and Poultry | Fruit and Vegetables

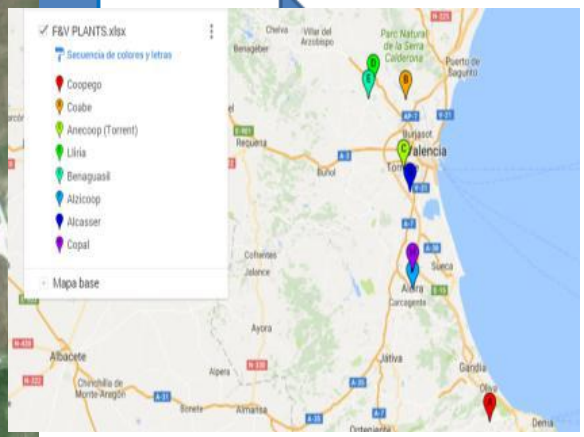
Real Time Monitoring System

Agro-food Cooperatives, Universities and Research Centers to reduce energy consumption and develop collaborative energy management systems - SCOoPE project

Horizon 2020 research and innovation programme under grant agreement N° 695965

Collaborative Energy Management





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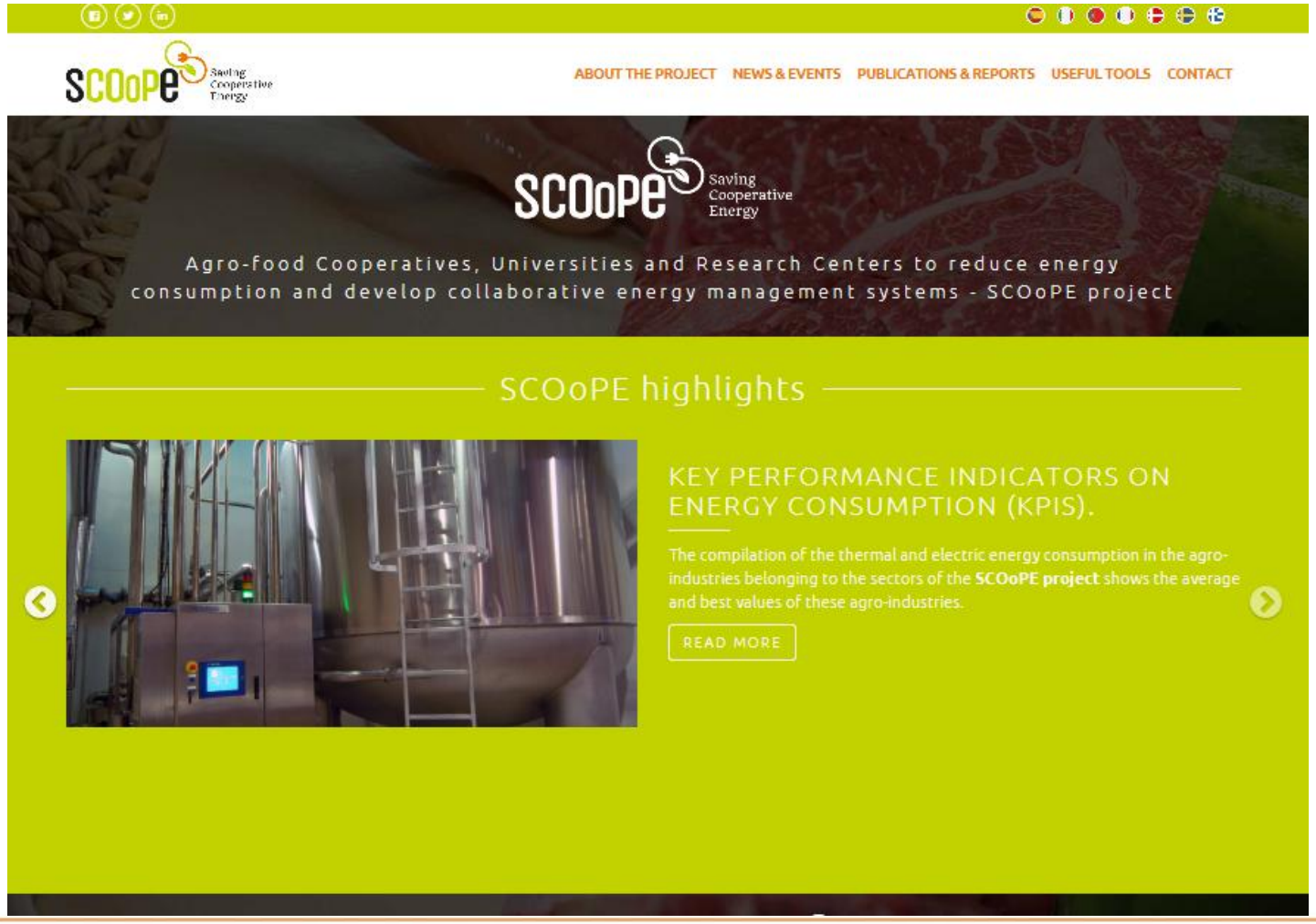

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SCOoPE Saving Cooperative Energy

Thank you for your attention!

SCOoPE@agro-alimentarias.coop

Company Logo

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