



Diputació  
Barcelona

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## PLA D'ACCIÓ DE L'ENERGIA SOSTENIBLE DEL MUNICIPI DE SALLENT



Ajuntament de Sallent

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DOCUMENT III: DOCUMENT DE SÍNTESI

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DESEMBRE 2010

## **Pla d'Acció d' Energia Sostenible del municipi de Sallent**

El Pla d'Acció per a l'Energia Sostenible s'ajusta al "Pacte d'alcaldes/esses" de la UE i segueix la metodologia establerta des de l'Oficina Tècnica de Canvi Climàtic i Sostenibilitat.

El Pacte d'alcaldes/esses compromet als municipis adherits a aconseguir els objectius comunitaris de reducció de les emissions de gasos d'efecte hivernacle mitjançant actuacions relacionades amb l'eficiència energètica i les fonts d'energies renovables.

### **Equip Redactor:**

**AMBIENS, gestió de recursos ambientals SL, Empresa consultora**

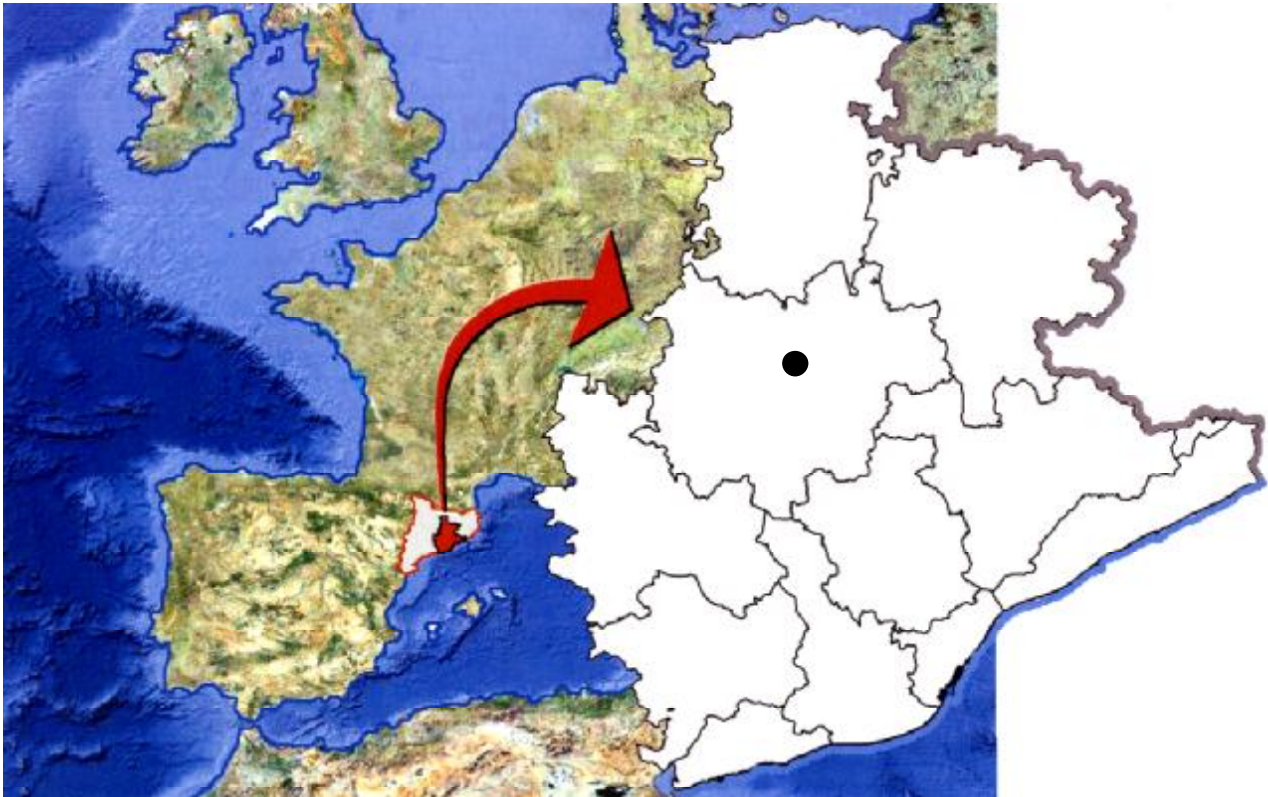
Laia Martí Valls. Consultora.  
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### **Ajuntament de Sallent; Responsables seguiment PAES**

Ramon Serra. Enginyer municipal.  
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### **Diputació de Barcelona; Direcció del treball**

Albert Vendrell Roca. Tècnic de la Diputació de Barcelona.



## **Sustainable Energy Action Plan of SALLENT**

**Date of adhesion to Covenant of Mayors: 05/14/2010**

Population	7,088	inh.
Seasonal population	-	inh.
Total surface area	65.2	Km <sup>2</sup>
Urban land	3.18	Km <sup>2</sup>
Urban waste production	1.26	kg/cap.day
Water consumption	431.5	litres/cap.day
Energy consumption	7,704	kWh/cap.
Type of municipality <sup>1</sup>	Services	

<sup>1</sup> Industrial, rural, touristic...

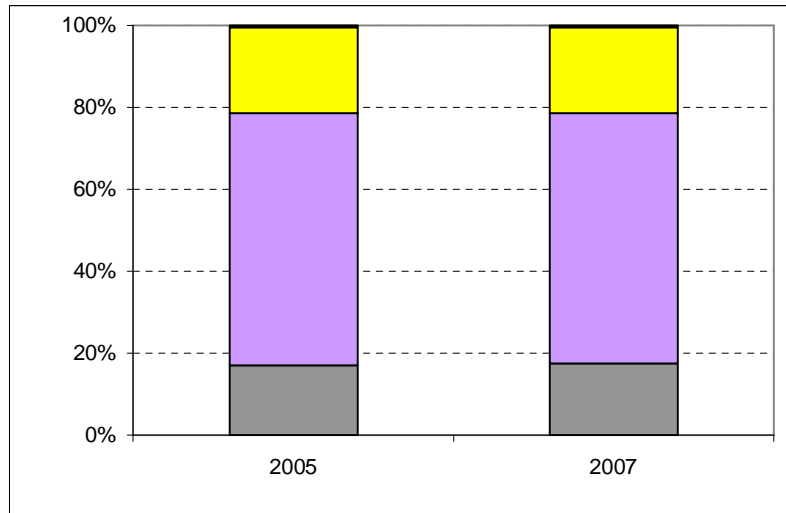
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# 1 Emission assessment

## 1.1 General evolution of the municipality considering all sectors

### 1.1.1 Emissions per sources



	2005	2007
Liquid fuels	15,195.00	14,970.71
Electricity	53,594.89	52,104.47
Natural gas	18,446.52	18,104.43
LPG	527.74	435.24

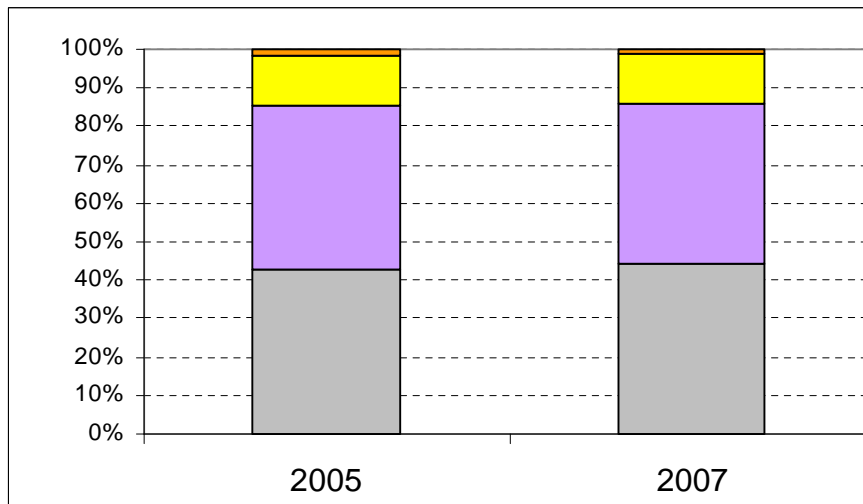
Source: ICAEN (Catalan Institute of Energy)  
LPG: Liquefied Petroleum Gas

### 1.1.2 Municipality's total emissions

	2005	2007
Total tCO <sub>2</sub> eq.	87,764.16	85,614.86
tCO <sub>2</sub> eq. /cap.	12.38	12.08

## 1.2 General emission evolution in SEAP categories

### 1.2.1 Emissions per sources



	2005	2007
Liquid fuels	14,126.02	14,480.14
Electricity	14,181.03	13,642.39
Natural gas	4,452.92	4,186.56
LPG	443.31	365.60

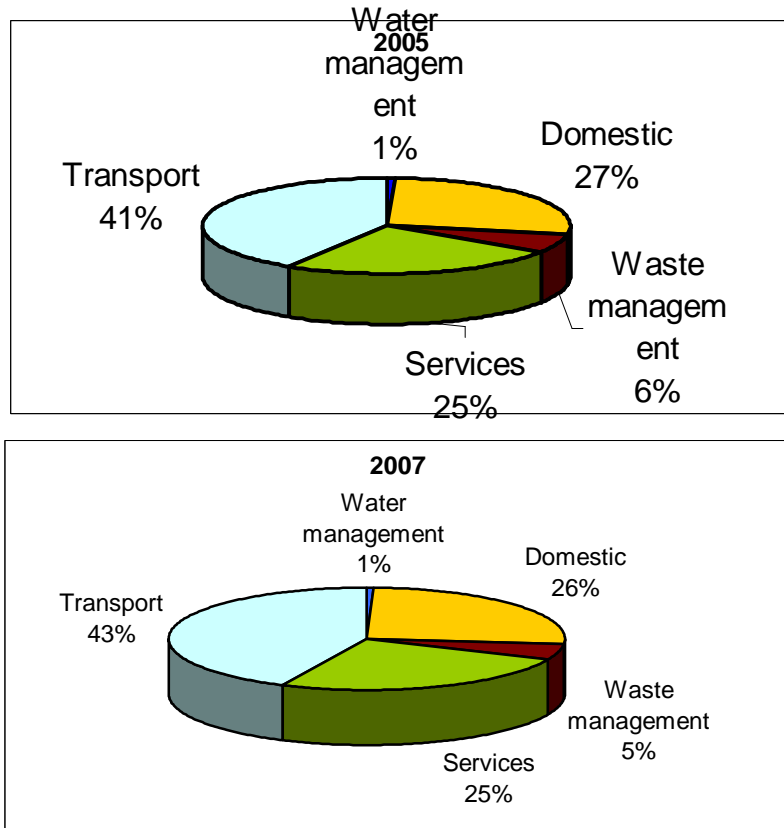
Source: ICAEN

### 1.2.2 Total SEAP emissions

	2005	2007
Total tCO <sub>2</sub> eq.	33,203.27	32,674.70
tCO <sub>2</sub> eq. /cap.	4.68	4.61

Source: ICAEN and Town Council

### 1.2.3 SEAP emissions per sectors



Source: Source: ICAEN and Town Council

### 1.2.4 Local energy production less than 20 MW (%)

		2005	2007
Private sector	Renewable sources	8%	5.5%
	Other		
Municipal public sector	Renewable sources		
	Other		
Other	Renewable sources		
	Other		

Source: ICAEN

### 1.3 Town council emissions

#### 1.3.1 Town council emissions

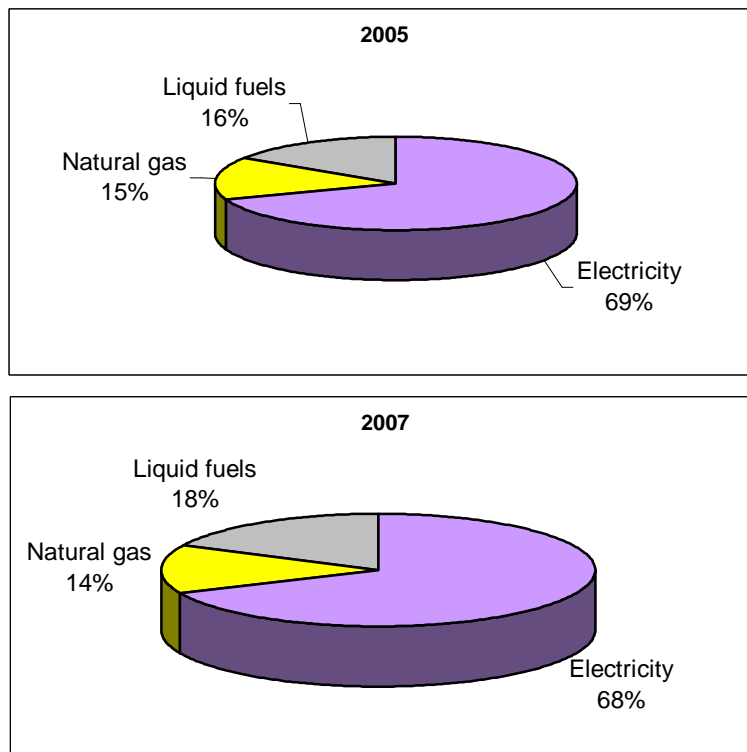
	2005	2007
Total tCO <sub>2</sub> eq.	1,157.14	1,158.40
tCO <sub>2</sub> eq. /cap.	0.16	0.16
% of the total municipality's emissions	1.31%	1.35%

Source: ICAEN and Town Council

#### 1.3.2 Town council emissions per sources

	2005	2007
Electricity	804.60	789.97
Natural gas	168.99	163.18
Liquefied Petroleum Gas (LPG)	0.00	0.00
Liquid fuels	183.55	205.25

Source: Town Council



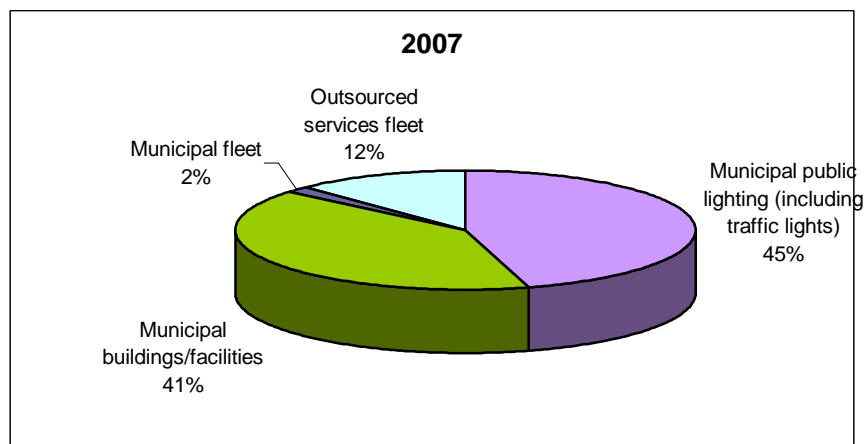
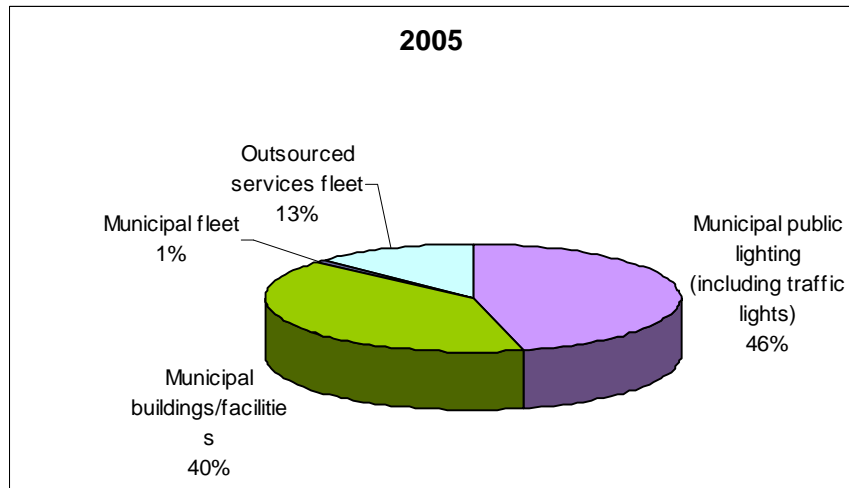
Source: Town Council



### 1.3.3 Town council emissions per sectors

	2005	2007
Municipal public lighting (including traffic lights)	522.21	527.46
Municipal buildings/facilities	459.27	470.44
Municipal fleet	10.34	18.23
Outsourced services fleet	142.26	142.26
Public transport		

Source: Town Council



Source: Town Council

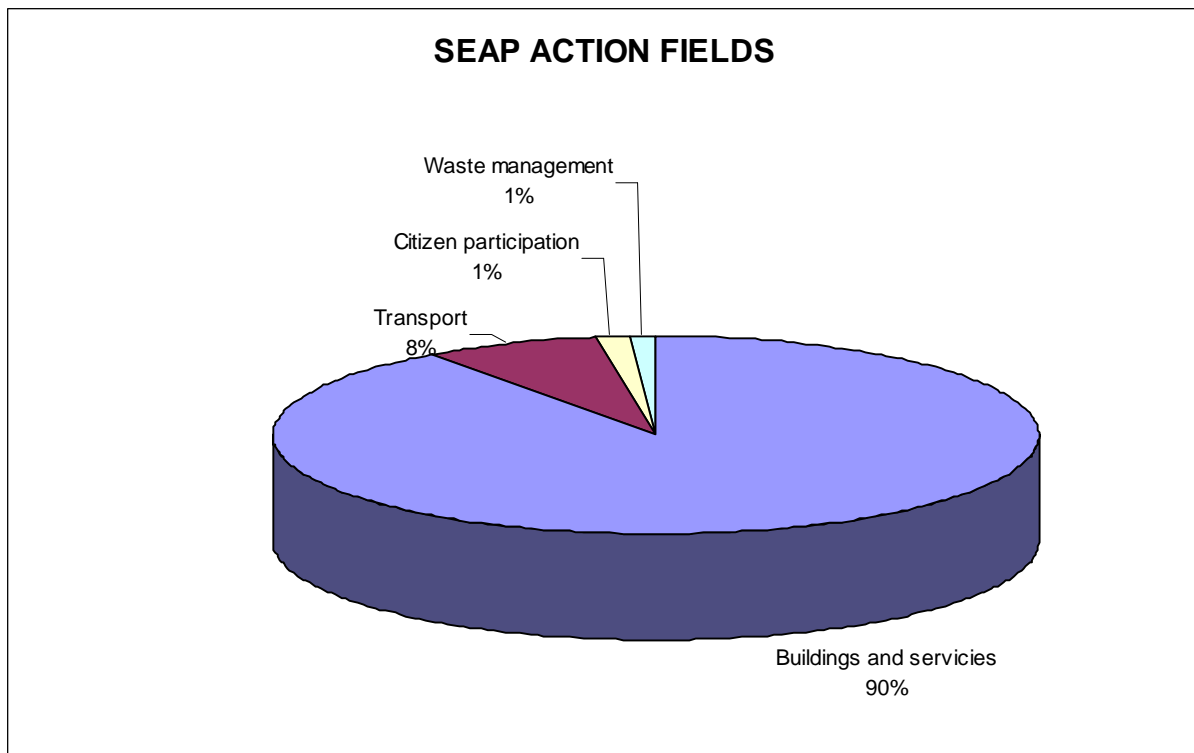
### 1.3.4 Highest consumers of municipal buildings/facilities (%)

Highest	Buildings/facilities	2005	2007
	Nursing home	21.4%	19.0%
	Torres Amat School	20.9%	25.2%
	Public library	10.3%	6.3%
	Football stadium	7.6%	7.7%
	Police	6.7%	3.0%
	Music School	5.8%	5.8%
lowest			

Source: Town Council

## 2 Action plan

### 2.1 Selection of action fields<sup>2</sup>



Source:

SEAP emissions reduction target >20% (%)	26.33%
<b>SEAP emissions reduction target (tones) (*)</b>	33,203
<b>SEAP emissions reduction target (tones/capita)</b>	4.68
<b>Emissions reduction between 2005 and 2007 implementing municipal policies(**)</b>	<b>528.57</b>
<b>Number of actions of the SEAP</b>	<b>80</b>

(\*) there are 6 actions that haven't been quantified, but they will contribute to emission reduction therefore the final reduction will exceed the established target (20%)

<sup>2</sup> % of the number of actions for each SEAP action field

## 2.2 Key elements of the SEAP

Actions/measures per field of action	Responsible department, person	Implementation [start & end time]	Estimated costs per action/measure	Expected CO <sub>2</sub> Reduction per Measure [kt/a]
<b>BUILDINGS, EQUIPMENTS/FACILITIES AND INDUSTRIES:</b>				
Municipal buildings, equipments/facilities				
Improvement the building heating system of the Municipal School of Music: isolation of the heating pipes.	Department of Municipal Services	Short-term	750.00€	3.77
Improvement the building heating system of the Municipal School of Music: Change the boiler for a biomassa boiler	Mayoralty	Long-term	10,000.00€	11.31
Improvement the building heating system of the Municipal School of Music: Annual boiler maintenance.	Department of Municipal Services	Short-term	250.00€	1.36
Improvement the building heating system of the Municipal School of Music: Sectorization	Department of Municipal Services	Medium term		0.50
Improvement the building heating system of the Municipal School of Music: isolation of walls and the roof.	Department of Municipal Services	Medium term		1.42
Improved lighting system of the Municipal Music School: Segmentation of the lights for classrooms.	Department of Municipal Services	Short-term		0.28
Improvement the building heating system of the School "Els Pins": Change the boiler for a biomassa boiler	Mayoralty	Long-term	10,000.00€	10.23
Improvement the building heating system of School "Els Pins": Annual boiler maintenance.	Department of Municipal Services	Long-term	250.00€	0.97
Improvement the building heating system of School "Els Pins": Change the windows.	Department of Municipal Services	Long-term		2.65
Improvement the building heating system of School "Els Pins": isolation of walls and the roof.	Department of Municipal Services	Medium term		1.59
Improvement the building heating system of School "Els Pins": placement of shutters in place of curtains.	Department of Municipal Services	Short-term		0.90
Improved lighting system School "Els Pins": Replacement traditional bulbs for low-consumption bulbs and LEDs.	Department of Municipal Services	Short-term	4,195.80€	10.09

Improvement the building heating system of the police and the municipal archives: thermostat's re-location.	Department Municipal Services	of	Short-term		0.89
Improvement the building heating system of the police and the municipal archives: Change the boiler for an electric boiler.	Department Municipal Services	of	Short-term		12.46
Improvement the building heating system of the police and the municipal archives: Placed a biomass boiler.	Department Municipal Services	of	Long-term		14.49
Improvement the building heating system of the police and the municipal archives: Annual boiler maintenance.	Department Municipal Services	of	Short-term	250.00€	5.93
Improvement the building heating system of the police and the municipal archives: Isolation of the roof.	Department Municipal Services	of	Medium term		2.53
Improvement the building heating system of the police and the municipal archives: Change the windows.	Department Municipal Services	of	Medium term		2.87
Improved lighting system of the police and the municipal archives: Change the position of the bulbs and replacement traditional bulbs for low-consumption bulbs.	Department Municipal Services	of	Short-term	4,622.06€	4.53
Improved lighting system "Sala Vilà Valentí": Replacement traditional bulbs for low-consumption bulbs.	Department Municipal Services	of	Short-term	17,705.76€	1.01
Improvement the building heating system of the Public Library: Change the boiler for a biomassa boiler	Mayoralty		Long-term	20,000.00€	6.98
Improvement the building heating system of the Public Library: Change the windows.	Mayoralty		Long-term		1.75
Improvement the building heating system of the Public Library: Annual boiler maintenance.	Department Municipal Services	of	Short-term	250.00€	0.84
Improvement the building heating system of the Public Library: Install a double door entry.	Department Municipal Services	of	Long-term		1.54
Improved lighting system of the Public Library: Placement movement sensors.	Department Municipal Services	of	Short-term	1,820.00€	2.34
Reduced reactive of the Public Library.	Department Municipal Services	of	Short-term	1,324.45€	0
Improvement the building heating system of the Football Stadium: Substitution the boiler for solar panels.	Mayoralty		Medium term	45,000.00€	3.25
Improvement the building heating system of the Football Stadium: Annual boiler maintenance.	Department Municipal Services	of	Short-term		1.95

Improvement the building heating system of the Football Stadium: Change the windows.	Department Municipal Services	of	Long-term		2.87
Improvement of the building heating system of the Football Stadium: Isolation of the roof.	Department Municipal Services	of	Long-term		1.7
Improved lighting system of the football stadium: Placement movement sensors.	Department Municipal Services	of	Short-term	2,047.50€	0.75
Improved lighting system of the Municipal Sports Centre: Placement movement sensors.	Department Municipal Services	of	Short-term	4,095.00€	0.85
Improved lighting system of the Municipal Sports Centre: Placement photosensors.	Department Municipal Services	of	Short-term	805.03€	0.57
Improvement the building heating system of the Municipal Sports Centre: Annual boiler maintenance.	Department Municipal Services	of	Short-term	250.00€	0.28
Improved lighting system of the City Council: Placement movement sensors.	Department Municipal Services	of	Short-term	2,730.00€	0.56
Improved lighting system of the City Council: Lighting sectorization.	Department Municipal Services	of	Short-term	20,343.94€	0.53
Improved lighting system of the City Council: Replacement traditional bulbs for low-consumption bulbs and LEDs.	Department Municipal Services	of	Short-term	20,000.00€	5.05
Improvement the building heating system of the City Council: Change the boiler for a biomassa boiler	Department Municipal Services	of	Long-term	250.00€	14.12
Improvement the building heating system of the Municipal Sports Centre: Annual air conditioning system maintenance.	Department Municipal Services	of	Short-term	2,275.00€	1.34
Improved lighting system of the "Centru": Placement movement sensors	Department Municipal Services	of	Short-term		0
Improvement the building heating system of the "Centru": Annual boiler maintenance.	Department Municipal Services	of	Short-term		0
Improvement the building heating system of the Nursing Home "Residencia St Bernat": Cahge the boiler for another one more efficient.	Department Municipal Services	of	Long-term	1,500.00€	1.16
Improvement the building heating system of the Nursing Home "Residencia St Bernat": Cahge the boiler for another one of high efficiency.	Department of Welfare and Family		Long-term	2,400.00€	2.86
Improvement the building heating system of the Nursing Home "Residencia St Bernat": Change the boiler.	Department of Welfare and Family		Long-term	9,500.00€	23.85

Improvement the building heating system of the Nursing Home "Residencia St Bernat": Regulation of the temperature.	Department of Welfare and Family	Medium term	650.00€	14.31
Improvement the building heating system of the Nursing Home "Residencia St Bernat": isolation of the heating pipes.	Department of Welfare and Family	Short-term	100.00€	1.91
Improvement the building heating system of the Nursing Home "Residencia St Bernat": Control the thermostats.	Department of Welfare and Family	Short-term	120.00€	0.24
Improvement the building heating system of the Nursing Home "Residencia St Bernat": Stop the heating system if someone open the windows.	Department of Welfare and Family	Medium term	900.00€	0.48
Reduce the consumption of the Nursing Home "Residencia St Bernat": Change the appliance for another ones more efficient.	Department of Welfare and Family	Medium term		2.95
Improved lighting system of the Nursing Home "Residencia St Bernat": Replacement traditional bulbs for low-consumption bulbs.	Department of Welfare and Family	Short-term	153.00€	0.5
Improved lighting system of the Nursing Home "Residencia St Bernat": Replacement halogen bulbs for low-consumption bulbs.	Department of Welfare and Family	Short-term	288.00€	0.57
Improved lighting system of the Nursing Home "Residencia St Bernat": Replacement traditional bulbs for low-consumption bulbs.	Department of Welfare and Family	Short-term	1,975.00€	0.88
Improved lighting system of the Nursing Home "Residencia St Bernat": Use natural light instated of artificial one.	Department of Welfare and Family	Short-term	1.70€	0.01
Improved lighting system of the Nursing Home "Residencia St Bernat": Placement photosensors.	Department of Welfare and Family	Short-term	20.00€	0.02
Improved lighting system of the Nursing Home "Residencia St Bernat": Placement of movement sensors.	Department of Welfare and Family	Short-term	60.00€	0.06
Improved lighting system of the Nursing Home "Residencia St Bernat": Change the windows.	Department of Welfare and Family	Long-term	8,531.00€	5.37
Improved lighting system of the Nursing Home "Residencia St Bernat": Isolate the stairs.	Department of Welfare and Family	Medium term	850.00€	1.07
Improvement the building heating system of the Nursing Home "Residencia St Bernat": Placed thermostatic valve radiator.	Department of Welfare and Family	Medium term	1,750.00€	9.54

Improved lighting system of the Municipal Music School: Replacement traditional bulbs for low-consumption bulbs and LEDs.	Department of Municipal Services	Medium term	11,081.20€	2.62
Improved lighting system of the Football Stadium: Replacement traditional bulbs for low-consumption bulbs and LEDs.	Department of Municipal Services		15,058.90€	7.08
Improved lighting system of the Municipal Sports Center: Replacement traditional bulbs for low-consumption bulbs and LEDs.	Department of Municipal Services		20,100.90€	8.09
Reduced reactive of the Football Stadium.	Department of Municipal Services	Short-term	1,324.45€	0
Reduced reactive of the Municipal Sports Centre.	Department of Municipal Services	Short-term	1,324.45€	0
Euronet 50/50 project for the municipal schools	Department of Education	Medium term		0
<b>Municipal public lighting (including traffic lights)</b>				
Public lighting: Change the lighting for a more efficient one. VM vs. VSAP	Department of Municipal Services	Medium term	159,010.97€	58.28
Public lighting: Switch on controller	Department of Municipal Services	Medium term	7,500.00€	5.33
Public lighting: Change the lighting for a more efficient one. VSAP vs. LED	Department of Municipal Services		921,326.00€	177.68
<b>Residential buildings</b>				
Guide to energy saving: sustainable homes	Department of Environmental sustainability	Long-term	2,611.92€	1,621.98
Tax reduction of procedures for the installation of renewable energy in homes, farms, businesses and industries	Mayoralty	Medium term		836.94
Awareness campaign to reduce water consumption	Department of Environmental sustainability	Medium term	24,246.54€	81.05
Tax reduction and streamlining of procedures for the installation of renewable energy in homes.	Department of Urban planning and economic policy	Short-term		1,260.00
<b>Tertiary (non municipal) buildings, equipments</b>				



Tax reduction for placement low-consumption bulbs and LEDs in stores lightening.	Department of Environmental sustainability		Medium term		n.d.
<b>TRANSPORT</b>					
Municipal fleet and outsourced services fleet					
Renewal of the fleet of municipal vehicles. Hybrid and electric car.	Mayoralty		Long-term		2.65
Guide to energy saving: vehicle usage and efficient driving.	Department of Governorate		Short-term	2,611.92€	42.81
Private and commercial transport					
Guide to energy saving: vehicle usage and efficient driving.	Department of Governorate		Medium term	2,500.00€	90.97
Tax reduction for hybrid and electric cars.	Department of Urban planning and economic policy		Medium term		649.68
Awareness campaign to car share	Department of Governorate		Short-term	24,246.65€	0.00
Drafting a plan and a study of urban mobility	Department of Governorate		Medium term	12,000.00€	2,599.27
<b>WORKING WITH THE CITIZENS AND STAKEHOLDERS (CITIZEN PARTICIPATION)</b>					
Office Information about the financial support and grants for the renewable energy sources	Department of Environmental sustainability		Medium term		0.00
<b>OTHER SECTOR</b>					
Waste management					
Reduction municipal waste and valorisation of the materials like PROGREMIC says	Department of Environmental sustainability		Short-term		1,097.65
<b>TOTAL</b>					<b>8,745.01</b>

<b>SECTORS</b>	<b>Energy saving target per sector [GWh] in 2020</b>	<b>CO<sub>2</sub> reduction target per sector [kt] in 2020</b>
<b>BUILDINGS, EQUIPMENTS/FACILITIES AND INDUSTRIES:</b>	<b>7,786,201.12</b>	<b>4,261.98</b>
Municipal buildings, equipments/facilities	486,287.62	220.71
Municipal public lighting (including traffic lights)	633,304.76	241.29
Residential buildings	6,666,608.74	3,799.98
<b>TRANSPORT</b>	<b>12,679,333.10</b>	<b>3,385.38</b>
Municipal fleet and outsourced services fleet	170,262.00	45.46
Private and commercial transport	12,509,071.10	3,339.92
<b>WORKING WITH THE CITIZENS AND STAKEHOLDERS (CITIZEN PARTICIPATION)</b>	<b>n.d.</b>	<b>n.d.</b>
Advisory services	n.d.	n.d.
<b>OTHER SECTOR</b>	<b>n.d.</b>	<b>1,097.65</b>
Waste management	n.d.	1,097.65