



## Good practices register

This good practices register is developed to ensure coordination as to content and publication. The good practices are collected from the partner regions. The content are accessible and can be modified by all project partners. **Energy monitoring** best practices and **financial monitoring** were investigated.

Good practices collected by partners P1, P2, ... are classified GP1-1, GP1-2, ... and GP2-1, ...  
Others Good Practices are classified GPO-1, GPO-2, ...

### Good practices categories

<b>Good practices categories</b>
<b>1-Good Practice measurement (hardware)</b>
<b>2-Good software</b>
<b>3-Good financial tools</b>
<b>4-Good organisation and management</b>
<b>5-Good data (energy and/or financial) collections system</b>
<b>6-Good energy and/or financial indicators and/or ergonomoy</b>
<b>7-Good data analysing system</b>
<b>8-Good use of data</b>

## Good practices by partner

- [P1 Energy Agency of Podravje-Institution for Sustainable Energy Use \(SL\)](#)

<a href="#">GP 1-1</a>	Energy, CO2 and financial monitoring system in 200 public buildings: software program, used by Energy agency as the energy manager and building's managers.
<a href="#">GP 1-2</a>	Energy refurbishment of a building with the energy contracting system and using cohesion fund.
<a href="#">GP 1-3</a>	Educational and informational campaign for schools and kindergartens (workshops for housekeepers, kitchen and cleaning staff, headmasters, teachers, pupils.)
<a href="#">GP 1-4</a>	Energy performance contracting for public street lighting system
<a href="#">GP 1-5</a>	Energy monitoring and management system

- [P2 Local Energy Management Agency of Almada, AGENEAL \(PT\)](#)

<a href="#">GP 2-1</a>	Pilot experience in social housing: Intelligent monitoring of energy consumption
<a href="#">GP 2-2</a>	Almada's Climate Fund
<a href="#">GP 2-3</a>	Telemanagement of public lighting systems - EcoEnlight

- [P3 Southern Regional Assembly \(IE\)](#)

<a href="#">GP 3-1</a>	Public Sector Reporting & Monitoring Programme
<a href="#">GP 3-2</a>	Use of sensors for collection of environmental data
<a href="#">GP 3-3</a>	Optimising Power @ Work Campaign

- [P4 Florentine Energy Agency \(IT\)](#)

<a href="#">GP 4-1</a>	Green Hospital Project
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- [P5 Municipality of Lorient \(FR\)](#)

<a href="#">GP 5-1</a>	Saint-Sulpice Smart City
<a href="#">GP 5-2</a>	Raspberry Pi electricity monitoring and free software data collection
<a href="#">GP 5-3</a>	Citizens, owners of solar panels
<a href="#">GP 5-4</a>	TiSolenn

- [P6 Energy Agency for Southeast Sweden \(SE\)](#)

<a href="#">GP 6-1</a>	Galaxen förskola “Passivhouse Preschool”
<a href="#">GP 6-2</a>	Mönsterås library “Low energy library”
<a href="#">GP 6-3</a>	Arena Oskarshamn “Ice heats water”

- [P7 Mazovia Energy Agency \(MAE\) \(PL\)](#)

<a href="#">GP 7-1</a>	EINSTEIN
<a href="#">GP 7-2</a>	Jessica
<a href="#">GP 7-3</a>	Local Energy Manager (LEM) studies
<a href="#">GP 7-4</a>	Energy Management System in water company
<a href="#">GP 7-5</a>	PPP in thermo-modernization of public utility facilities
<a href="#">GP 7-6</a>	Mazovian Center for Energy Management

- [P8 Development Bank of Saxony-Anhalt \(DE\)](#)

<a href="#">GP 8-1</a>	Implementation of an excellent energy monitoring system in a primary school
<a href="#">GP 8-2</a>	Using asset and building technology (cogeneration plant) (Gymnasium Stassfurt)
<a href="#">GP 8-3</a>	Energy efficiency as a consequence of changing the cubic volume of a building (Evangelische Sekundarschule Haldensleben)
<a href="#">GP 8-4</a>	How to involve users and raise the awareness in a nursery? (Kita Güst’ner Spatzen)
<a href="#">GP 8-5</a>	How to set up and to operate an innovative financial instrument (IFI) in ERDF in the FP 2014-2020?

- [P9 Santander City Council \(ES\)](#)

<a href="#">GP 9-1</a>	PPP Contract for the street lighting upgrade in Santander
<a href="#">GP 9-2</a>	ESCO Contract for 5 schools in Madrid Municipality
<a href="#">GP 9-3</a>	Renovation of 10 nursing homes old oil boilers by new gas boilers

- [Other good practices](#)


<a href="#">GP O-1</a>	Arduino and Raspberry Pi electricity monitoring
<a href="#">GP O-2</a>	Monitoring solution

[Annexes](#)

## P1 Energy agency of Podravje (SL)


**Contact person** Vlasta Krmelj

### GP 1-1

 <b>Good practice #1-1</b>		Energy, CO2 and financial monitoring system in 200 public buildings: software program, used by Energy agency as the energy manager and building's managers.	
<b>Main institution involved</b>		Municipality of Maribor	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	X
<b>Location</b>		Maribor, Podravje Region, Slovenia	
		Different public buildings: schools, kindergartens, sports halls, library, city hall,..	
<b>Timescale</b>		(if available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	Municipality has implemented energy monitoring system. It is web based monitoring tool using special software programme for monitoring and analysing energy related data and preparing reports. Each public building names the responsible person for data input: data from energy bills – heat and electricity and drinking water. Energy agency follow the data, analyse it and inform the owner and the user about the results. Agency also recommend needed measure to lower the energy and costs. The data from the system is also used for the preparation of energy certificate and documents need for investment. In 2017 around 200 public buildings were in the systems. The systems is able to make benchmarking between them regarding different indicators set: energy use per m2 or per user or per year.		
<b>Financial</b>	(if available)		

<b>scheme</b>	
<b>Further informations</b>	(web adress)
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP
<b>Long description</b>	(if available)
<b>Pictures, videos</b>	(if available)


## GP 1-2

 <b>Good practice</b> <b>#1-2</b>		Energy refurbishment of a building with the energy contracting system and using cohesion fund.	
<b>Main institution involved</b>		Municipality of Radlje ob Dravi	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	X
<b>Location</b>	Radlje ob Dravi, Koroška region, Slovenia		
	Used to be a shopping centre (2500 m2). It is library (public), a bank and a cafe (private)		
<b>Timescale</b>	(if available)		
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>Municipality bought an old shopping centre in the city centre. They decided to make energy refurbishment and move in the public library. Part of the house is owned by private sector: bank and a cafe. All owners made the agreement to co-financed the energy refurbishment with the energy contracting system. Municipality received subsidies from Cohesion fund. The prepare the documentation and had a public call for energy service provider (ESCO)and made an 15 years agreement with them to finance the refurbishment with the savings. The work will be finalized in December 2017. Central management system will be implemented to monitor savings. Yearly reports will be presented to the City Council and Ministry.</p>		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	(web adress)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		

<b>Long description</b>	(if available)
<b>Pictures, videos</b>	(if available)




## GP 1-3

 <b>Good practice</b> <b>#1-3</b>		Educational and informational campaign for schools and kindergartens (workshops for housekeepers, kitchen and cleaning staff, headmasters, teachers, pupils.)	
<b>Main institution involved</b>		Energy Agency of Maribor	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Maribor, Podravje Region, Slovenia	
		Primary Schools and Kindergartens (120 buildings)	
<b>Timescale</b>		2016 - ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	Energy agency as the energy manager for the city has implemented educational campaign about the energy, CO2 and money savings. Specialized workshops for different target groups were organized: for headmasters, teachers, pupils, kitchen and cleaning staff, housekeepers. The content of the workshops was about energy saving measures: organisational or investment. For pupils special workshops lasting one or more hours were prepared. Differed pedagogical tools or equipment were used (models of houses, cars, photovoltaic cells,..)		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	(web adress)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		
<b>Long description</b>	(if available)		

**Pictures,  
videos**


(if available)

## GP 1-4

 <b>Good practice #1-4</b>		Energy performance contracting for public street lighting system.	
<b>Main institution involved</b>		Municipality of Radlje ob Dravi	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	
		X	
<b>Location</b>		Radlje ob Dravi, Koroška Region, Slovenia	
		Public lighting	
<b>Timescale</b>		(if available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		X	<b>5-Good data (energy and/or financial) collections system</b>
<b>2-Good software</b>			<b>6-Good energy and/or financial indicators and/or ergonomomy</b>
<b>3-Good financial tools</b>		X	<b>7-Good data analysing system</b>
<b>4-Good organisation and management</b>		X	<b>8-Good use of data</b>
<b>Abstract or Summary</b>		Municipality decided to make energy refurbishment of street lighting using the energy contracting systems where investment is paid by future savings and street lighting is management by private usually ESCO company. The investment documentation was prepared using energy data, financial indicators. Public call was prepared and announced. The agreement for 14 years was signed. During the lifetime of the agreement energy and money savings will be monitored central monitoring and management system and regularly reported to the Municipal Council. The same system and procedure can be implemented for indoor lighting of public buildings or outdoor playgrounds.	
<b>Financial scheme</b>		It is a public private partnership project, (how to prepare initial documents, public procurement procedure, monitoring savings,...). The same system can be used for indoor lighting or lighting a sports halls, playgrounds,..	
<b>Further informations</b>		(web adress)	
<b>Contact details</b>		name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP	
<b>Long</b>		(if available)	

<b>description</b>	
<b>Pictures, videos</b>	(if available)


## GP 1-5

 <b>Good practice #1-5</b>		Energy monitoring and management system	
<b>Main institution involved</b>		Energy Agency	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	
		X	
<b>Location</b>		Nova Gorica, Primorska Region, Slovenia	
		Different public buildings	
<b>Timescale</b>		(if available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		X	<b>5-Good data (energy and/or financial) collections system</b>
<b>2-Good software</b>		X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>
<b>3-Good financial tools</b>		X	<b>7-Good data analysing system</b>
<b>4-Good organisation and management</b>		X	<b>8-Good use of data</b>
<b>Abstract or Summary</b>	50 public buildings are linked to one online web based energy monitoring and management system. Energy agency manages the system. Some buildings have energy measurements devices some are using monthly data. The data is used to prepare the investment documentation for ELENA fund (energy contracting system)- around 30 mio EUR. The ELENA application was prepared. The decision about getting ELENA financing will be know till the end of the year.		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	(web adress)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		
<b>Long description</b>	(if available)		
<b>Pictures, videos</b>	(if available)		



## P2 Local Energy Agency of Almada (PT)


### GP2-1

 <b>Good practice #2-1</b>		Pilot experience in social housing: Intelligent monitoring of energy consumption	
<b>1</b>			
<b>Main institution involved</b>		(if available)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>	Almada, Portugal		
	Multiapartment building used for social housing		
<b>Timescale</b>	2012-2016		
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>The HERB Project, Holistic Energy-efficient Retrofitting of residential Buildings, was implemented in Almada between 2012 and 2016. It focused on the development and demonstration of energy efficient new and innovative technologies and solutions for retrofitting and performance monitoring of residential buildings in EU countries. In Almada, the demonstration building is located at the parish of Caparica. It is a multiapartment building used for social housing purposes and started off with very low energy standards. The energy refurbishment of this building included roof and external wall insulation; solar thermal and PV hybrid collectors with surface nanocoating; high efficiency double glazing windows; LED lighting; natural ventilation and the installation of a remote monitoring system with sensors for electricity, gas and water consumption, alongside with humidity and temperature sensors (picture below)</p> <p>From an asset rating point of view, the introduced measures resulted in 93,6% energy savings and 92,7% CO2 savings (this includes electricity produced on site). Most importantly, for a deprived social environment, is the satisfaction of the residents: pre and post retrofit surveys revealed that comfort perceived as increased significantly (50% increase) and the number of discomfort situations has decreased dramatically (90% decrease).</p>		

<b>Financial scheme</b>	(if available)
<b>Further informations</b>	<a href="http://www.euroretrofit.com/">http://www.euroretrofit.com/</a> <a href="https://www.facebook.com/euroretrofit/">https://www.facebook.com/euroretrofit/</a>
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP
<b>Long description</b>	(if available)
<b>Pictures, videos</b>	(if available)




## GP2-2

 <b>Good practice #2-2</b>		Almada's Climate Fund	
<b>Main institution involved</b>		City of Almada	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	
		X	
<b>Location</b>		Almada, Portugal	
		Service buildings	
<b>Timescale</b>		2009-ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
		X	
<b>3-Good financial tools</b>		X	
<b>4-Good organisation and management</b>		X	
<b>7-Good data analysing system</b>			
<b>8-Good use of data</b>			
<b>Abstract or Summary</b>	<p>In 2009 the city of Almada set up the "Almada Less Carbon Climate Fund" which aimed at reducing Almada's carbon footprint by financing energy efficiency and renewable energy investments. After eight years of successful operation, the Fund has now been redesigned and upgraded to be given a revolving nature (revolving fund). This means that the part of the cost savings resulting from implemented energy efficiency measures will directly return to the Fund, ensuring the leverage of the fund and boosting further investments for a clean energy transition.</p>		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	(web page)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		
<b>Long description</b>	<p>Between 2009 and 2016 it deployed roughly 1,6 M€ of investment, avoiding the emission of 953 tCO<sub>2</sub>/year, though the reduction of 3 000 000 kWh (corresponding to a saving of 375 000 €/year on energy costs). Examples of measures implemented are, among other:</p>		

	<ul style="list-style-type: none"> <li>☒ Telemangement system for the public lighting in Almada</li> <li>☒ LED lighting on all traffic lights and tests in Public Lighting</li> <li>☒ Energy efficient lighting and HVAC systems in municipal buildings</li> <li>☒ Electric vehicles for the municipal fleet</li> <li>☒ Efficient lighting in historical monuments</li> <li>☒ Efficient lighting in schools</li> <li>☒ Solar PV on municipal buildings</li> <li>☒ Energy retrofiting of social housing buildings</li> <li>☒ Envelope refurbishment in office buildings</li> </ul> <p>One of the most important innovations of the fund is the ‘shared benefits’ approach which assumes different sharing schemes between the fund and the “beneficiary department”, based on the characteristic of the project and during its lifetime. The main assumptions and objectives are to ensure the sustainability and the leverage effect of the fund, automatically prioritising the most cost-benefit projects and to directly help the “beneficiary department”.</p> <p>The new revolving methodology, already formally approved and under evaluation in three implemented projects, will make the savings more visible since:</p> <ul style="list-style-type: none"> <li>☒ they will become part of the budgets of the involved departments;</li> <li>☒ it will make monitoring continuous and more effective since the efficient operation of the projects has direct and visible impacts on the department’s budget;</li> <li>☒ it ensures locking in of investment on energy efficiency and renewable energy;</li> <li>☒ Improved governance for a low carbon development, making the strategic objectives for energy efficiency less dependent of political changes/orientation</li> </ul>
<b>Pictures, videos</b>	(if available)


## GP2-3

 <b>Good practice #2-3</b>		Telemangement of public lighting systems - EcoEnLight	
<b>Main institution involved</b>		City of Almada	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	X
<b>Location</b>		Almada, Portugal	
		Public lighting infrastructures	
<b>Timescale</b>		2011-2013	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	The system is based on the use of efficient control and command equipment based on information and communication technologies (ICT) which contribute for a significant reduction of energy consumption as a result of optimized management of public lighting equipment.		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	(web page)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		
<b>Long description</b>	The EcoEnLight project was implemented by the municipality of Almada between 2011 and 2013. This project was focused on improving the energy efficiency of Almada's public lighting system, which accounts for more than 60% of the municipality's energy consumption. During the EcoEnLight project, a smart tele-management system for Almada's public lighting system was procured and implemented. This tele-management system allows to remotely manage public lighting intensity in Almada by adjusting the luminous flux of all the lights		

	<p>throughout the day. This way, a more efficient and tailored energy consumption coming from the public lighting system can be ensured, which fully takes into account the needs of the citizens who use Almada's roads during day and night. Thanks to the EcoEnLight project, the city has been able to reduce the energy needs for public lighting by roughly 40%. This represents a reduction of nearly 0.6 GWh and 300 tons of CO<sub>2</sub>eq. The savings estimations, which include maintenance and electricity cost savings, pointed to an average of €80,000/year. More than €464,000 were invested in the EcoEnLight project in total. Roughly 1500 light points were refurbished which means roughly 5% of all the public lighting in Almada. The success of the EcoEnlight approach led to the development of the EcoEnlight II project which is currently under preparation and on the pipeline for financing of 3335 light points (this time adding to the tele-management system the replacement of lamps to LED lighting). An overall investment of roughly €1,500,000 for an annual saving of €170,000 and a payback period of 8 years. At the end of this intervention more than 15% of the public lighting in Almada will be highly efficient.</p>
<p><b>Pictures, videos</b></p>	<p>(if available)</p>

## P3- Southern Regional Assembly (IE)

### GP3-1

 <b>Good practice #3-1</b>		Public Sector Reporting & Monitoring Programme	
<b>Main institution involved</b>		Sustainable Energy Authority of Ireland (SEAI)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	X
<b>Location</b>		Throughout Ireland	
		All public-sector building	
<b>Timescale</b>		(if available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X*
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>*for basic monitoring</p> <p>It is a statutory requirement that all Irish public bodies report annually to Sustainable Energy Ireland (SEAI) on energy performance. To facilitate this, an on-line monitoring and reporting (M&amp;R) system was established enabling SEAI to track progress towards the 2020 energy efficiency target of 33%. Energy usage data is supplied directly to the R&amp;M system by the energy provider and additional information is input by selected users in each public-sector organisation.</p>		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	<a href="http://www.euroretrofit.com/">http://www.euroretrofit.com/</a> <a href="https://www.facebook.com/euroretrofit/">https://www.facebook.com/euroretrofit/</a>		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		

<p><b>Long description</b></p>	<p>A yearly report of energy usage is compiled for each public body and a score card is automatically produced by the system which provides graphs and data suitable for publishing on websites or in Annual Reports. The public body’s progress on its target glidepath is mapped, as well as the performance being benchmarked against other public bodies. The report includes information about the baseline (2009), energy saving projects, energy types and a suitable activity metric is chosen by each organisation. An activity metric is a measure of the activity that the organisation undertakes. Common activity metric used include full time equivalent(FTE)staff or floor area. The energy usage data is then adjusted for factors such as weather, uses of energy eg heating etc.</p> <p>The validity of submitted data is checked once the reports are selected for Data Verification Assessment (DVA). The level of checks can range from a public body providing substantiation for a specific piece of data submitted to more comprehensive assessments including on-site visits by qualified assessors. Annual results are published widely by SEAI. SEAI run annual training for users of the R&amp;M system and have also established a user’s group to provide feedback on the system. Other complementary supports are provided by SEAI such as energy audits, grants, energy efficiency work groups (allowing exchange of best practice between and “Energy link” (an online community) to help users share information in relation to reducing fulfil their obligations.</p>
<p><b>Pictures, videos</b></p>	<p>(if available)</p>


## GP3-2

 <b>Good</b> <b>practice #3-2</b>		Use of sensors for collection of environmental data	
<b>Main institution involved</b>		WIN-IPT Project – Wales Ireland Network for Innovative Photovoltaic Technologies	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		counties in Ireland (Waterford, Wexford, Dublin, Kilkenny, Tipperary, & Carlow) and Wales (Anglesey, Gwynedd, Denbighshire, Flintshire, Conwy, Wrexham, Swansea, Carmarthenshire, & Powys)	
		Selected public buildings (offices)	
<b>Timescale</b>		2012-2014	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>The WIN-IPT was a 3-year project funded under the Ireland Wales Programme (2012 – 2014). It was an industry-informed initiative, designed to promote the development of innovation and enhance business opportunities for SMEs working in Photovoltaic (PV) technologies. The project provided direct R&amp;D support to develop Self-powered wireless sensors for building management and control functions. The project was successful in developing a range of integrated sensor technologies that can be self-powered, communicate wirelessly and operate indefinitely without human intervention. The integrated systems can be built at an economical cost and provide a platform for the future Internet of Things revolution. Demonstration trials of new technologies at Local Authority sites were carried out to contribute to national goals of reducing CO2 emissions from buildings. Some of these devices are currently operating at a number of sites in Ireland Wales region monitoring air quality in public buildings. The possibility of the using the technology already developed by the WIN-IPT project (self-powered wireless sensors) has potential to be used (and modified if required?) for the purposes of energy monitoring in the EMPOWER Project.</p>		
<b>Financial</b>	The project was funded under the Ireland Wales Programme 2007-2013		

<b>scheme</b>	
<b>Further informations</b>	(if available)
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP
<b>Long description</b>	(if available)
<b>Pictures, videos</b>	(if available)



### GP3-3


 <b>Good practice #3-3</b>		Optimising Power @ Work Campaign	
<b>Main institution involved</b>		Office of Public Works – OPW	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	
<b>Location</b>		Throughout Ireland	
		Variety of public buildings eg. Offices, garda stations, college campuses, hospitals	
<b>Timescale</b>		2012-2014	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
		X	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
		X	
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	
		X	
<b>Abstract or Summary</b>	Optimising Power @ Work is the OPW’s staff energy awareness campaign, which runs in all large Civil Service buildings and some Government agencies throughout Ireland. The initiative aims to change staff behaviour towards energy use and eliminating energy wastage within these buildings.		
<b>Financial scheme</b>	(if available)		
<b>Further informations</b>	(if available)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		
<b>Long description</b>	One of the main factors for the success of Optimising Power @ Work is that every building has been fitted with equipment that automatically logs energy usage. The data is used to set targets and prepare energy reports on individual buildings. To date, average energy savings of over 18% have been achieved in the participating buildings.		

	<p>Optimising Power @ Work provides a range of tools, activities and support structures, designed to bring together the very best in technology, innovation and creativity.</p> <p>Optimising Power @ Work uses three key elements to support buildings and energy teams in reaching their energy reduction targets:</p> <ol style="list-style-type: none"> <li>1. Technology</li> <li>2. Specialist Expertise</li> <li>3. Staff Engagement</li> </ol> <p><b>Monitoring &amp; Targeting</b>  In order for a behavioural change campaign to be successful, it is necessary to provide the participants with reliable and up-to-date feedback on the results of their efforts. The use of dedicated Energy Monitoring Systems (EMS) has been central to delivering this feedback</p> <p>Energy data loggers are installed, which collect data on electricity, gas, oil or LPG use every 15 minutes. The data is stored in the OPW's central energy data repository before specialist software is used to prepare customised energy reports for each building.  The building's Energy Advisor analyses the data for energy saving opportunities and discusses the report and findings with the Energy Team at their regular meetings. The Energy Team can then use the information to target their actions and provide feedback on progress to management and the wider staff.</p> <p><b>Specialist Expertise</b>  An OP@W Energy Advisor is appointed to each building. The Energy Advisor assesses the historic energy performance of the facility and sets energy saving targets for the building. The performance of the building is measured against these targets, via the online EMS, and monthly progress reports. The Energy Advisor offers an insight into where energy savings may be achieved, through no or low-cost measures.</p> <p><b>Staff Engagement</b>  An active energy team is established in each building comprising key stakeholders from different business functions within the organisation. The OP@W Energy Advisor intensively engages with the energy team and staff in the building on a continuous basis to identify energy saving opportunities.</p> <p><b>Other Supports - Energy Web Portal</b>  A range of flexible resources and tools that can be tailored to assist with each building's progress towards energy reduction.</p>
<b>Pictures, videos</b>	(if available)

## P4 AFE FLORENTINE ENERGY AGENCY (IT)

Contact person Sergio Gatteschi

### GP 5-1

 <b>Good practice #4-1</b>		Green Hospital Project	
<b>Main institution involved</b>		USL Tuscany Southeast	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Arezzo / Italy	
		Hospital	
<b>Timescale</b>		Started 10/10/2011 - ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>It's called "Project Green Hospital" and is the initiative implemented by the USL Tuscany Southeast to make more efficient and friendly hospitals. The center of this activity are the management and the reduction of consumption of heat and energy and the attention for the illumination.</p> <p>The USL 8 of Arezzo, newly merged in the Company USL Tuscany Southeast, has implemented a structured project of energy efficiency, called "Project Green Hospital", which involved at first the hospital establishments covered by the ' company provides: Arezzo, Valdarno, Bibbiena, Sansepolcro and Cortona and then was extended to other properties: Districts Social and Health, Polyclinics, RSA, Houses of Health. The main action that was performed is the installation of cogeneration of electricity and heat fueled by methane gas in the Hospitals of Arezzo and Valdarno (the two most important Hospitals in terms of energy consumption) through which it is possible today to self-produce internally to the hospital about half the electrical energy of which the two hospitals require. At this</p>		

	<p>intervention was followed by the energy upgrading of thermal power plants of 5 hospitals, which in three cases (Bibbiena, Sansepolcro, Cortona) has seen the passage of thermal aging plants steam / hot water to new central hot water with modern boilers and burners modulating whilst in the other two (Arezzo, Valdarno) saw the change of obsolete hot water boilers with new high efficiency combined with modulating burners. A 47 kWp photovoltaic system at the Hospital of Arezzo has been installed and have started procedures to entrust the work to build one 50 kWp at the Cortona Hospital. They were then upgraded the refrigeration units of Arezzo and Bibbiena Hospital replacing the antiquated refrigeration units with new high efficiency condensates groups in magnetic levitation water (Bibbiena) and condensate in the air (Arezzo). It was then made effective the domestic hot water system through the traditional system boiler to a plate heat exchanger system (Bibbiena, Sansepolcro, Valdarno).</p> <p>This for 5 hospitals, other properties (Social Health Districts, outpatient clinics, RSA, Houses of Health) have been carried out interventions to improve energy efficiency of thermal power stations by installing condensing boilers (Ex Motherhood - Arezzo) or thermal units energy efficient (other properties). At the Hospital of Arezzo he is about to be implemented a project, called illumination, for the reduction of the electrical consumption due to the lighting bodies. Activities that was implemented across the board to all properties is putting in place a contract of high-performance energy service that allowed our company to significantly reduce thermal energy consumption compared to past spending.</p>
<b>Financial scheme</b>	(not available)
<b>Further informations</b>	<a href="http://www.usl8.toscana.it/">http://www.usl8.toscana.it/</a>
<b>Contact details</b>	Daniele Giorni Energy Manager USL Southeast Tuscany daniele[dot]giorni [at] uslsudest.toscana.it
<b>Long description</b>	<p>Hospital properties require enormous amounts of energy for their operation and at the same time they produce significant amounts of CO2. The USL Tuscany South East Company has implemented the nationally-awarded 'green hospital' project, which was funded by the Ministry of the Environment at 80%.</p> <p>The hospitals of the former Asl 8, now confined to the USL Tuscany South East Company, are now all "painted" green. After Arezzo and Valdarno the ecological and economic turnaround has come to the so-called periphery hospitals: the entire thermal energy production system of the Santa Margherita Hospital in Cortona has been completely refurbished, making it highly efficient and performing thanks to modern equipment conception that provide the same levels of thermal comfort and service with lower fuel consumption. Altogether 650,000 € have been invested in energy renovations in the hospitals of Cortona, Bibbiena and Sansepolcro, which will reduce energy costs by around 125,000 € each year, with a return on investment of around 5 years.</p> <p>Not to mention that money for these interventions has not been distracted by health investments since the intervention was funded 80% by the Ministry of the Environment with a special fund for energy efficiency in virtuous public administrations. But not enough: a 50 kW photovoltaic plant has been inaugurated</p>

at Fratta by the summer, which will provide clean energy for the Hospital of Valdichiana. In this case the cost of the intervention is 115,000 € and the economic savings of 14,000 € each year, so with a return time of about 8 years. “These interventions - explained the CEO of USL Toscana Sud Est Enrico Desideri - demonstrate on one hand that the Company is committed to ensuring health care levels with an ever greater focus on the environment and reducing energy costs through the now famous “Green Hospital Project” and “the peripheral hospitals” the USL Company invests in professionalism and considerable resources: almost 800,000 € only in energy efficiency and renewable sources ”.

“With the work done at the Cortona Hospital, run by RTI Cpl Concordia / Manutencoop FM SpA under the direction of Ing. Riccardo Valdarnini - said Gilberto Cristofolletti, Technical Director of ASL - closes a major cycle in which the 5 thermal power plants of the hospitals of the Azienda Sanitaria Aretina have been energetically upgraded and thanks to the cogeneration plants realized in Arezzo and in Valdarno which has been guaranteed the auto-production of 50% of the electricity that each year our company needs with considerable economic savings. ”

“With this new plant - said Daniele Days, Energy Manager of Asl - costing a total of 170,000 €, we can yearly reduce the primary energy consumption of 27.23 tons of oil equivalent with significant environmental savings.”

#### THE NEW THERMAL CENTER OF CORTONA FRATTA OSPEDAL

The energy upgrading of the thermal power plant of the Fratta di Cortona Hospital, carried out under the management of the Energy Service for the USL Company, has replaced the obsolete superheated water heat generators with new, high-efficiency, energy-efficient hot water generators to modulating burners. A modern, high energy efficiency steam generator was also installed. Of course, the numbers in the game are remarkable: the power of the new thermal power plant is about 3,000 kWt.

#### NOT ONLY VALDICHIANA: FURTHER WORK TO SANSEPOLCRO AND BIBBIENA

In Bibbiena and Sansepolcro were replaced the old and inefficient steam generators. In fact, the thermal centers of the two hospitals were conceived with centralized steam production logic, its distribution within the hospital structure and many local hot water productions with heat exchangers. A logical operation that is poorly energy efficient, abandoned in favor of new high-energy hot water generators combined with modulating burners. In Bibbiena, a new high-efficiency refrigeration unit has also been built to replace a salient machinery with low energy yields.

#### AWARD “GREEN HOSPITAL” PROJECT

These works are important chapters in the book of the “green hospital” written by the Asl Technical Department. A project acknowledged by the National Public Administration Forum with the “Best Practice Public Heritage Award” and, as said, with a Ministry of the Environment Ministry with a three million-euro loss fund. Three years have passed since the start of the project, but this is still an intermediate step. There are other goals to achieve. Among the first, the “illumination” project (almost all lighting systems will be gradually replaced with LED lamps and automatic shutdown systems) and, as already mentioned, the construction of a 50 kW photovoltaic plant at the Fratta Hospital Cortona.


**Pictures,**


(not available)



## P5 Municipality of Lorient

### GP 5-1


 <b>Good practice #5-1</b>		Saint-Sulpice Smart City	
<b>Main institution involved</b>		Municipality of Saint Sulpice la Forêt	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Saint Sulpice la Forêt / Bretagne / France	
		Public buildings	
<b>Timescale</b>		2016 - ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>The energy and water consumption of communal buildings were analyzed and several points of improvement were identified:</p> <ul style="list-style-type: none"> <li>-Have “real time” consumption indicators</li> <li>-Identify leaks, or malfunctions as quickly as possible</li> <li>-Control the heating of communal facilities according to their use</li> <li>-Informing agents and users of the impact of their actions on the consumption of buildings in order to adapt behaviors</li> </ul>		
<b>Financial scheme</b>	(Rennes Metropole (conurbation in which Saint Sulpice belongs) invested in the LoRa infrastructure)		
<b>Further informations</b>	<a href="https://www.saint-sulpice-la-foret.fr/la-commune/les-projets/96-projets/450-smart-saint-sulpice-installation-des-capteurs">https://www.saint-sulpice-la-foret.fr/la-commune/les-projets/96-projets/450-smart-saint-sulpice-installation-des-capteurs</a>		
<b>Contact details</b>	<p>Yann Huaumé, Mayor of Saint-Sulpice-la-Forêt +33(0)2 99 66 23 63          Ulrich Rousseau CEO of Wi6labs +33 2 99 63 90 85</p>		

<p><b>Long description</b></p>	<p>In order to meet its energy consumption reduction problem, Saint Sulpice city set up a simple installation, requiring neither works and wiring.</p> <p>The deployment of a network of wireless sensors (with a very large Autonomy, 10 years on battery) allowing to study several parameters: temperature, water, gas and electricity. The data are collected and processed and the relevant information is returned, in the form of a dashboard, through an application. The equipments ( air conditioning, heating, light ) can also be controlled remotely. In addition, in case of anomaly (for example a water leak), the application send an alert allowing to act quickly. It is the alliance of the start-up Wi6Labs and the companies Alkante and TDF, which made it possible to develop this simple solution of installation, use and maintenance.</p> <p>The assistance of the Brittany Region, Ademe and Rennes Métropole has been necessary for the project. The experiment during 18 months, within the framework of the innovation aid Rennes Saint Malo Lab. In this project the municipality is a territory of experimentation for the two companies Wi6Labs and Alkante. The objective is to validate that the solution implemented allows us to reduce the energy consumption of buildings by at least 20% (savings of 10,000 € per year) and to have a return on investment less than 5 years.</p> <p>With the data collected, the municipal team will be able to define an energy optimization strategy. In addition, the savings will enable the city to get involved in other projects. The city of Saint-Sulpice-la-Forêt opens the way to a multitude of “Smart Village”, which should appear in the years to come.</p>
<p><b>Pictures, videos</b></p>	 <p>The top photograph shows a small, white, rectangular sensor mounted on a vertical wooden plank wall. The sensor has a small screen and some text on it. The background shows a room with a yellow wall and a Union Jack flag.</p> <p>The bottom photograph shows a group of about ten people gathered around a table in a meeting room. They appear to be engaged in a discussion or presentation. There are various items on the table, including a laptop, papers, and a red bag. The room has a modern, open-plan layout with large windows and a drop ceiling.</p>





## GP 5-2

 <b>Good practice #5-2</b>		Raspberry Pi electricity monitoring and free software data collection	
<b>Main institution involved</b>		Municipality of Lorient	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Lorient / Bretagne / France several public buildings and solar pannels	
<b>Timescale</b>		2016 - ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	The city of Lorient wanted to set up a system for collecting and displaying the consumption and production of energy in its buildings. This in order to reduce energy consumption. Rather than using commercially available, proprietary, closed and expensive systems, it has chosen to use the world of free software.		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	<a href="https://github.com/Liberasys/dl_datalogging_documentation">https://github.com/Liberasys/dl_datalogging_documentation</a>		
<b>Contact details</b>	Pierre Crépeaux, head of Lorient's Environment Department <pcrepeaux [at] mairie-lorient [dot] fr>		
<b>Long description</b>	<p>Thanks to its expertise in information systems and its expertise in electronic integration, Liberasys company responded to the market and was selected. After a phase of study, Liberasys defined upstream all that will be necessary in the long term for a project of this magnitude and then set about the realization of a prototype.</p> <p>Liberasys has selected existing free components on the hardware and software level</p>		

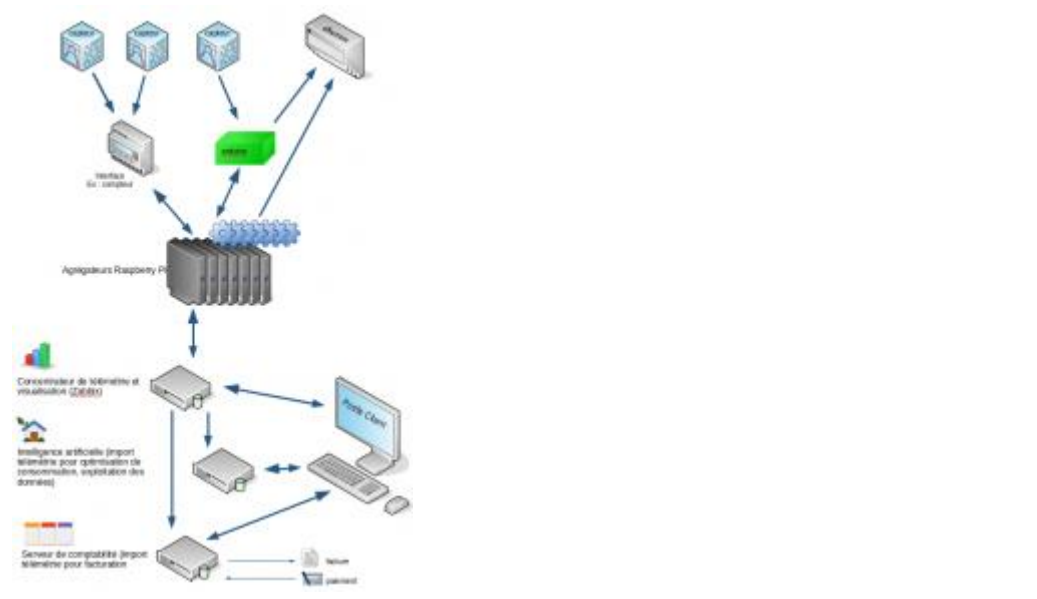
in order to reduce costs for the customer (the city of Lorient). The refereeing was not easy at the hardware level. Finally the Raspberry Pi platform was selected. The choice was confirmed by the results of this study: [etude\\_single\\_board\\_computers\\_2016](#). In the end, given the latest information published on the security problems of the Internet of Things, it seems that the right decision has been made. Indeed, choosing a standard platform with a large community ensures the long-term update. This is a big plus for computer security and future software compatibility.

Liberasys has developed a software for decoding and interpreting the frames emitted by electricity meters of type PME/PMI (medium power >36kW). Were used code in Python, an object model, multi-thread, mutex, data persistence, a WEB API,... many technical challenges in short.


The result now allows real-time monitoring and archiving on the server of electrical consumption, solar panel production, temperature... a wide range of applications opens up for the city of Lorient.

As the solution is open, a shift to other interested communities is possible.

**Pictures,  
videos**




## GP 5-3

 <b>Good practice #5-3</b>		Citizens, owners of solar panels	
<b>Main institution involved</b>		Municipality of Lorient	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Lorient / Bretagne / France	
		several public buildings (school, apprentices's formation center, city hall)	
<b>Timescale</b>		2016 - ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>Facing a dedicated and fixed budget, the municipality of Lorient found another way to develop renewable energies thanks to people's financing. The city invested a first time in 2014-2015 in one of the school but is now working with citizens. Lorient mobilized a local organization composed of eco-friendly and aware citizens. From now on shareholders, the citizens created "Oncimè", which means "let's do it" to finance 174 solar panels in 2016-2017 an 106 new solar pannels in december 2017. Besides developing renewable energies, the 82 campaigners reclaimed the French energetic policy and steer it towards active democracy.</p>		

<b>Financial scheme</b>	<p style="text-align: center;"><b>Investissement Citoyen</b></p> <p>The diagram illustrates a citizen investment scheme. At the top, a solar panel is shown. Below it, a group of diverse people represents the 'Collectif citoyen (propriétaire loueur des panneaux « nus »)'. An arrow labeled 'Location xx€/an' points from the collective to ICRENT AN ORIENT, which is noted as '(locataire des panneaux et propriétaire du matériel électrique de raccordement et des fixations)'. From ICRENT, an arrow points to a school building labeled 'ECOLE', with the note 'Pose sur un bâtiment. Production d'électricité en autoconsommation'. Another arrow points from the school back to the collective, labeled '+ Actions de sensibilisation'. At the bottom left, a small ICRENT logo is present. Text next to it states: 'Prix de l'électricité produite &lt; prix d'achat de l'électricité de réseau.' At the bottom right, another ICRENT logo is present with the text: 'Production d'électricité en autoconsommation'.</p>
<b>Further informations</b>	<a href="https://energie-partagee.org/projets/oncime/">https://energie-partagee.org/projets/oncime/</a>
<b>Contact details</b>	Pierre Crépeaux, Head of Environment Department in Lorient pcrepeaux [at]marie-lorient [dot] com
<b>Long description</b>	(not available)
<b>Pictures, videos</b>	<a href="https://player.vimeo.com/video/163420339">https://player.vimeo.com/video/163420339</a>

## GP 5-4


 <b>Good practice #5-4</b>		TiSolenn	
<b>Main institution involved</b>		Lorient Agglomeration and Local Energy Agency of South Brittany (ALOEN)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Lorient agglomeration / Bretagne / France	
		social and private housing	
<b>Timescale</b>		2015-2018	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	TiSolenn is a tool for monitoring and helping to reduce energy consumptions. A website is proposed to consumers within the framework of Solenn experimentation, led by Lorient Agglomération in partnership with ALOEN ( Local Energy Agency of South Brittany), Enedis ( French power supplier), the South Brittany University, the families confederation from Morbihan.		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	<a href="https://tisolenn.lorient-agglo.fr/">https://tisolenn.lorient-agglo.fr/</a>		
<b>Contact details</b>	Marie Laure Lamy Head of ALOEN <a href="https://www.aloen.fr/contact">https://www.aloen.fr/contact</a>		
<b>Long description</b>	<p>Consumers can :</p> <ul style="list-style-type: none"> <li>-follow and compare their consumptions thanks to their connected electric meter</li> <li>-enquire about energy consumptions reduction thanks to daily ecological gestures provided on the website, and articles on varies themes</li> <li>-contribute to energy reduction in your neighbourhood joining the economical</li> </ul>		

	dynamic of the group -benefit thematic workshops about energy with
<b>Pictures, videos</b>	

## P6 Energy Agency for southeast Sweden (SE)

<b>Contact person</b>	Lena Eckberg
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### GP 6-1

 <b>Good practice #6-1</b>		Galaxen förskola "Passivhouse Preeschool"	
<b>Main institution involved</b>		Mönsterås Municipality	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>	Mönsterås, Kalmar county, Sweden		
	Galaxen preeschool		
<b>Timescale</b>	(not available)		
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>Galaxen preeschool is one of Mönsterås municipality's new public buildings with a very clear environmental profile. When the decision was made to build the new preeschool, they decided to connect it to a school, but with its own technical system.</p> <p>The building is a wood construction, build in passive house technology, it has a clear environmental profile, PV and sedum-roof.</p> <p>The construction in wood is followed by a lot of visible wooden details and the construction is leaning to gain natural shade from the sun. the building gives a rather closed impression to the north and open to the south direction.</p>		
<b>Financial scheme</b>	(not available)		
<b>Further</b>	(web)		




<b>informations</b>	
<b>Contact details</b>	(not available)
<b>Long description</b>	<p>Extra fact - the preeschooling system in Sweden:  The municipalities provides preeschooling for children from the age of one when parents are working or studying, and when parents are unemployed or on leave of absence.  Children of parents who are unemployed or on leave of absence are normally a place for at least 3 hours a day or 15 hours a week. In addition, municipalities provides preschooling to</p> <ul style="list-style-type: none"> <li>- all children at least 525 hours per year free of charge from the autumn term when the child reaches the age of 3 (general preschool).</li> <li>- Children in need of special support.</li> </ul> <p>There are both municipal and independent preschools. Independent preschools can be run as e.g. parent- or staff co-operatives, by a foundation or a company. It is the responsibility of the municipalities to ensure that there are preschools and that children are offered a place. It is the municipalities that approve independent preschools and who are also responsible for checking that preschooling fulfils the requirements of high quality and safety. The same rules apply to independent preschools as to municipal preschools.</p>
<b>Pictures, videos</b>	

GP 6-2

 <b>Good practice #6-2</b>		Mönsterås library “Low energy library”	
<b>Main institution involved</b>		Municipality Mönsterås	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Mönsterås, Kalmar county, Sweden	
		Library	
<b>Timescale</b>		2013	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>Mönsterås municipality’s new library (2013) is a steel and concrete construction with triple glaxed windows. It is heated (floor heating) with district heating produced in the large pulp industry in the municipality. The PV on the roof produces the annual need of electricity (20000 kWh) and the sedum rood reduces the load on outdoor draining system (rain water). The energy usage is 30% of a traditiponal building and the rotating heat-exchange device in the basement recirculate 80% of the heat from the ventilation system. The lighting system is mostly LED and at the screens in the entrance the energy consumption and electricity production is monitored for all visitors for awareness raising purposes.</p>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>			

**Pictures,  
videos**

GP 6-3


 <b>Good practice</b> <b>#6-3</b>		Arena Oskarshamn "Ice heats water"	
<b>Main institution involved</b>		Municipality of Oskarshamn	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Oskarshamn, Kalmar county, Sweden	
		The public ice-hockey arena combined with public bath with small water park and gym	
<b>Timescale</b>		2004-2005 / 2011	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	Arena Oskarshamn is the home ice of Swedish ice-hockey team IK Oskarshamn located in the south-east of Sweden. The ice-hockey arena was built in 1974 and completely rebuilt and renovated in 2004-2005 during a new public bath and with a small water park was built connected to the ice hall as well as an outdoor artificial lawn (for soccer) which half a year requires warmth to be soft and the second half of the year requires chill when it becomes an ice area for ice-bandy.		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>	Arena Oskarshamn is a complex facility where the ice hall needs cooling (freeze) and is placed closely connected the bath area which require a lot of heat. To keep the energy costs down, they have invested in various energy-efficient solutions that		

	<p>improves gradually.</p> <p>In 2011, a rebuilding of the cooling plants was initiated to use the surplus heat from the units that cools the ice area outside and the ice indoors to heat the swimming pools and water park.</p> <p>Accordingly, the heat is sent from one part of the facility to another where heat pump technology is used on a large scale, and in that way the system is self-sufficient on heat.</p> <p>The system is fully automated and monitored via mobile phones and I pads.</p> <p>Following the major energy optimization, several smaller energy efficiency projects have been implemented, for instance switching to LED lighting, new energy doors, cold air fans instead of hot air fans in the changing rooms, new insulated hockey frame and a smaller solar cell system (a small pilot plant).</p> <p>All energy efficiency measures have been initiated by the internal organization who, with their commitment to everyday work, find out different ways to improvement the energy performance of the plant. This is appreciated by managers and politicians who often grant funding for the actions.</p> <p>For example, the investment in energy doors, which closes between ice hall and public spaces, gave a better climate in the ice hall. This made it possible to start the Hockey season already in July and invite to a summer camp for ice hockey. The economic savings of 10,000 € /year went directly into increased activity, in this case for children and young people.</p> <p>The large energy efficiency project at Arena Oskarshamn’s complex energy system is a unique project that has attracted great interest and hosted many technical visits.</p>
<p><b>Pictures, videos</b></p>	

## P7 Mazovia Energy Agency MAE (PL)


Contact person

### GP 7-1

 <b>Good practice #7-1</b>		EINSTEIN	
<b>Main institution involved</b>		Mazovia Energy Agency MAE	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Ząbki, Mazovia Region, Poland	
		Hospital campus	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>EINSTEIN is an EU funded project realized by MAE with 7FP contribution. The concept of the project was to assemble equipment for the acquisition and use of renewable energy in a whole year cycle (STES container, solar collector, district heating system, heat pump). The existing conditions in pilot buildings were taken into account. On those basis guidelines for upgrading to reduce energy consumption in accordance with the most stringent environmental requirements have been proposed. Within 48 months of project the Provincial Hospital for Nervous and Mental Illness "Drewnica" in the town of Ząbki gained the low-energy heating system consisting of:</p> <ul style="list-style-type: none"> <li>• Very low primary energy consumption due to the use of renewable energy sources and energy storage technologies. Reducing primary energy consumption by 70%, compared to the original building's pre-modernization situation, allows the design of new low-energy buildings</li> <li>• Heat pumps used as an efficient source of energy, working even with COP = 10.</li> </ul>		

	<ul style="list-style-type: none"> <li>• Renewable energy sources (151m<sup>2</sup> net surface of solar collectors)</li> <li>• Combination of STES and heat pumps, resulting in up to 20% energy efficiency increase, 35% reduction in primary energy consumption and 25% reduction in energy costs.</li> </ul>
<b>Financial scheme</b>	(not available)
<b>Further informations</b>	(web)
<b>Contact details</b>	(not available)
<b>Long description</b>	(not available)
<b>Pictures, videos</b>	


GP 7-2

 <b>Good practice #7-2</b>		Jessica	
<b>Main institution involved</b>		Municipalities of Mazovia Region	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	
		X	
<b>Location</b>		Mazovia Region, Poland	
		Energy project from cities only	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>		X	<b>7-Good data analysing system</b>
<b>4-Good organisation and management</b>		X	<b>8-Good use of data</b>
<b>Abstract or Summary</b>	<p>JESSICA initiative allows to use the European Union structural funds to make a return investments in integrated urban projects included in local strategic documents. Unlike grants, it offers a significantly wider range of financial instruments, including contributions, loans or guarantees, to provide a better and more comprehensive response to urban investment needs. Projects implemented with the support of JESSICA Initiative should generate revenue. In Poland JESSICA is implemented regionally in the framework of Regional Operational Programs (ROP). Examples of types of projects include:</p> <ul style="list-style-type: none"> <li>• construction, development and modernisation of renewable energy sources infrastructure</li> <li>• construction, extension and modernisation of infrastructure used to transfer and distribute the energy</li> <li>• construction, extension and modernisation of heating systems energy efficiency)</li> <li>• conversion of existing heating systems in public utility buildings to more environmentally friendly</li> <li>• thermomodernisation of buildings</li> </ul> <p>18 projects in the Region were supported (ca. 18,5 mio EUR in loans).</p>		
<b>Financial scheme</b>	(not available)		




<b>Further informations</b>	(web)
<b>Contact details</b>	(not available)
<b>Long description</b>	
<b>Pictures, videos</b>	

GP 7-3

 <b>Good practice #7-3</b>		Local Energy Manager (LEM) studies	
<b>Main institution involved</b>		MAE	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Warsaw, Mazovia Region, Poland	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>MAE in collaboration with Higher School of Ecology and Management started postgraduate studies “Local Energy Manager - LEM”, which are addressed to local government officials, employees or candidates for employees for municipal offices and organizational units of local self-government of the Mazovia Region as well as municipal enterprises. The aim of postgraduate studies is to acquire and develop legal, technical, economic, organizational and environmental knowledge of the production, distribution, storage, monitoring and marketing of conventional and renewable energy, as well as energy security at local level, including primarily planning, management and financing of energy in the municipality. MAE managed to successfully finish three edition of postgraduate studies with high interest of local governments and enterprises. 3 years of studies completed, ca. 150 graduates.</p>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		


<b>Long description</b>	
<b>Pictures, videos</b>	

GP 7-4

 <b>Good practice #7-4</b>		Energy Management System in water company	
<b>Main institution involved</b>		Water Supply and Sewerage Company in Otwock	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Otwock, Mazovia Region	
		Water Supply and Sewerage Company	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>With the use of norm ISO 50001, which purpose is to provide support with creating the systems necessary to improve the energy economy, including energy efficiency and energy consumption in organizations, Water Supply and Sewerage Company in Otwock implemented strategy of “Energy management system”. The main reason for developing such a strategy were rising prices of electricity and heat, which increase the cost of operating the company. It has become very important to identify and eliminate loss related to energy use and use energy from renewable sources. In the case of Otwock, this is the biogas generated during the stabilization of sewage sludge in the methane fermentation process of sludge generated by the treatment of municipal sewage.</p> <p>The results of strategy each year provides savings.</p>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		


<b>Long description</b>	
<b>Pictures, videos</b>	

## GP 7-5

 <b>Good practice #7-5</b>		PPP in thermo-modernization of public utility facilities	
<b>Main institution involved</b>		Municipality of Karczew	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	X
<b>Location</b>		Karczew, Mazovia Region, Poland	
		Schools, kindergartens, health centres	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>Karczew, a town located in the immediate vicinity of Warsaw, has implemented a project aimed at more efficient management of heat and electricity. The project was implemented by Siemens in the form of Public-Private Partnerships. The goal of the project was to achieve savings by monitoring the consumption of heat and electricity, improving the aesthetics of buildings and improving the energy management system. The scope of the project covered the thermo-modernization of 10 public buildings: schools and kindergartens and health centers. Modernization of the heating system in individual buildings consisted in changing the way of supplying the system from coal to gas or from electric to district heating. An energy monitoring system was used in the buildings. The most important results of the thermo-modernization work are the guaranteed savings of 56% for thermal energy and 20.9% for electricity. Verification of achieved savings is made every year after each heating season.</p>		
<b>Financial scheme</b>	PPP		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		

<b>Long description</b>	
<b>Pictures, videos</b>	

GP 7-6

 <b>Good practice #7-6</b>		Mazovian Center for Energy Management	
<b>Main institution involved</b>		MAE	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Mazovia Region, Poland	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>MAE has created a project that assists local government units to fulfill their obligations under the Energy Efficiency Act. The main structure of the project is an expert team which, based on software specially prepared for energy monitoring, has taken over some of the statutory responsibilities for energy management from local governments. This team works within the Mazovian Center for Energy Management (MAE unit). The project provides complete energy consumption monitoring and ongoing online access to both batch data and reports supporting the management of energy consumption in public facilities.</p>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>			
<b>Pictures, videos</b>			






## P8 Development Banke of Saxony Anhalt (DE)

Contact person

### GP 8-1


 <b>Good practice #8-1</b>		Implementation of an excellent energy monitoring system in a primary school	
<b>Main institution involved</b>		(not available)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Blankenburg, Saxony-Anhalt, Germany	
		Primary school	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<ul style="list-style-type: none"> <li>- energy passive house concept,</li> <li>- innovative ventilation and heating system,</li> <li>- sensors for room climate and CO2-Traffic lights in every room</li> <li>- specific monitoring concept</li> <li>- expert monitoring by university of applied sciences</li> </ul>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>	(not available)		

**Pictures, videos**

GP 8-2

 <b>Good practice #8-2</b>		Using asset and building technology (cogeneration plant) (Gymnasium Stassfurt)	
<b>Main institution involved</b>		(not available)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Stassfurt, Saxony-Anhalt, Germany	
		Sports hall, canteen, school	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<ul style="list-style-type: none"> <li>- an energy management system was installed</li> <li>- innovative heating &amp; hot water system with micro cogenerator</li> <li>- specific innovative solution for monument</li> <li>- specific solution for building complex between sportshall, canteen &amp; school</li> <li>- expert monitoring by university of applied sciences</li> </ul>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>	(not available)		
<b>Pictures, videos</b>			

GP 8-3


 <b>Good</b> <b>practice #8-3</b>		Energy efficiency as a consequence of changing the cubic volume of a building (Evangelische Sekundarschule Haldensleben)	
<b>Main institution involved</b>		(not available)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Haldensleben, Saxony-Anhalt, Germany	
		School, typical GDR formed building made with precast with concrete slabs	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<ul style="list-style-type: none"> <li>- Passive house concept,</li> <li>- top floor was removed,</li> <li>- the internal yard roofed over and the niches of the former “H” building closed by building elements</li> </ul>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>	(not available)		
<b>Pictures, videos</b>			

GP 8-4

 <b>Good practice #8-4</b>		How to involve users and raise the awareness in a nursery? (Kita Güst'ner Spatzen)	
<b>Main institution involved</b>		(not available)	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Güsten, Saxony-Anhalt, Germany	
		Nursery	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<ul style="list-style-type: none"> <li>- a much debated monitoring system is tested</li> <li>- good example for user integration</li> <li>- modern, innovative heating &amp; hot watersystem, sole-water heat pump combined with pholtovoltaics, solarheat, earthstore</li> <li>- innovative artificial ventilation with 85% heat recovery</li> </ul>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	<a href="https://www.volkssolidaritaet.de/fileadmin/content/kjf_sachsen_anhalt_media/360_Grad_VS_KJF/index_guestener_spatzen.html">https://www.volkssolidaritaet.de/fileadmin/content/kjf_sachsen_anhalt_media/360_Grad_VS_KJF/index_guestener_spatzen.html</a>		
<b>Contact details</b>	(not available)		
<b>Long description</b>	(not available)		

**Pictures,  
videos**

GP 8-5

 <b>Good practice</b> <b>#8-5</b>		How to set up and to operate an innovative financial instrument (IFI) in ERDF in the FP 2014-2020?	
<b>Main institution involved</b>		(not available)	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	X
<b>Location</b>		Magdeburg, Saxony-Anhalt, Germany	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	<p>- results and experiences in managing a Loan-Fund for SMEs in the FP 2007-2013 as a financial engineering instrument in accordance to Art. 44 of Regulation No. 1086/2006</p> <p>- experiences and first results of implementation and managing of a Loan-Fund for SMEs and innovative projects in the area of recycling and resource economy as a financial instrument in accordance to Art. 38 (1) (b) in connection with Art. 38 (4) (b) (ii) of regulation No. 1303/2013</p> <ul style="list-style-type: none"> <li>o fund management in a narrow sence like bookkeeping and accounting, treasury, risk controlling, monitoring and controlling, product management</li> <li>o granting of loans like consulting, cooperation with the borrowers bank, fraud prevention, checking the creditworthiness and collaterals, audit of the use of loans, intensive treatment and restructuring</li> </ul>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		




<b>Long description</b>	(not available)
<b>Pictures, videos</b>	

## P9 Santander City Council (SP)


Contact person

### GP 9-1

 <b>Good practice #9-1</b>		PPP Contract for the street lighting upgrade in Santander	
<b>Main institution involved</b>		(not available)	
<b>Field:</b>			
<b>Energy monitoring</b>		<b>Financial monitoring</b>	
		X	
<b>Location</b>		Santander, Cantabria, Spain	
		Streetlight	
<b>Timescale</b>		2012	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		X	<b>5-Good data (energy and/or financial) collections system</b>
<b>2-Good software</b>		X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>
<b>3-Good financial tools</b>		X	<b>7-Good data analysing system</b>
<b>4-Good organisation and management</b>		X	<b>8-Good use of data</b>
<b>Abstract or Summary</b>	<p>In December 2012, the EEEF signed its first Technical Assistance contract with the City Council of Santander for over €450K to conduct feasibility studies to review energy performance of the current public infrastructure and to elaborate a plan to improve the energy efficiency of the City.</p> <p>The scope of work included the completion of energy audits within 65 municipal buildings and of 22,700 street lighting points. Based on the results of the energy audits, the City Council took the decision to renovate the street lighting infrastructure and published a call for tender to select a private company to upgrade and maintain it.</p> <p>According to the PPP contract, the selected energy service company is required to invest €11m to upgrade over almost 23,000 lighting points in Santander. The project include the:</p> <ul style="list-style-type: none"> <li>☑ Upgrade of current lamps to cutting edge LED lighting technology,</li> <li>☑ Inclusion of point-to-point remote management,</li> </ul>		


	☑ Installation of 60 motion lighting sensors, to ensure illumination intensity regulation.
<b>Financial scheme</b>	PPP
<b>Further informations</b>	(web)
<b>Contact details</b>	(not available)
<b>Long description</b>	(not available)
<b>Pictures, videos</b>	

GP 9-2

 <b>Good practice #9-2</b>		ESCO Contract for 5 schools in Madrid Municipality	
<b>Main institution involved</b>		Municipality of Madrid	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Madrid, Madrid, Spain	
		5 schools	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	X
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>The purpose is gain benefits in Water and energy supplies, energy services and fully guaranteed maintenance.</p> <p>It includes air conditioning, domestic hot water (ACS), indoor and outdoor lighting, plumbing and building envelopes in the energy consumer centre integrated by the buildings and equipments of 5 schools of the City council from Madrid.</p> <p>The contractor carried out the measures and verifications of the savings following the methodology IPMVP (International Performance Measurement &amp; Verification Protocol) and by an EVO certified technician (Efficiency Valuation Organization) or an European Energy Manager (EUREM) Certified by the Eurem network.</p>		
<b>Financial scheme</b>	ESCO		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long description</b>	(not available)		

**Pictures,  
videos**

GP 9-3


 <b>Good practice #9-2</b>		Renovation of 10 nursing homes old oil boilers by new gas boilers	
<b>Main institution involved</b>		Regional government of Madrid	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Madrid, Madrid, Spain	
		Nursing homes	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>		<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	X
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	X
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	<p>This initiative was launched by the Regional Government of Madrid to renovate old oil boilers existing in the larger nursing homes existing in the region, and substitute them by new gas boilers with higher energy efficiency and reducing the energy costs.</p> <p>This helped both to the development of more efficient installations and the gas grid around the region. An energy audit was developed to detect the energy consumption, the original situation of the heating systems and the technical possibilities to substitute the boilers and use solar thermal heat.</p> <p>The Regional Government used the budget available from previous energy related measures to start the projects of new boilers installation, prioritizing those with better financing numbers (pay-back and cost savings).</p>		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(web)		
<b>Contact details</b>	(not available)		
<b>Long</b>	(not available)		

<b>description</b>	
<b>Pictures, videos</b>	

## Other Good Practices

Good practices identified by partners that could'nt be seen during a study visit (too far, no knowledge of involved institutions, ...)

### GP O-1

 <b>Good practice #O-3</b>		Arduino and Raspberry Pi electricity monitoring	
<b>Main institution involved</b>		Agglomeration of Le Havre	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	
<b>Location</b>		Le Havre / Normandy / France	
		Jules Siegfried High School / several public buildings	
<b>Timescale</b>		2016 - ongoing	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>	X	<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomomy</b>	
<b>3-Good financial tools</b>	X	<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>		<b>8-Good use of data</b>	X
<b>Abstract or Summary</b>	The Energy Department of the Agglomeration community of Le Havre and the Jules Siegfried High School (Le Havre) are implementing an experiment with cheap and easy monitoring system based on free and open source hardware enhanced with self-developed software. This project started in mid-2016		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	(not available)		
<b>Contact details</b>	name of the organisation or partner, email, phone... where any interested can get more detailed info about the GP		
<b>Long description</b>	Electricity consumption increases every year in public buildings despite energy efficiency efforts (lights, exhaust system, regulated systems...). In order to foster		



electricity savings - and save money, the first step is to know exactly which equipment consumes (and when) in the building.

DIY monitoring systems are cheap, easy to modify, upgrade and share. For on-the-spot datalogging (2 or 3 weeks), an Arduino Uno [+SD card and RTC shield] is used to collect data from the ENEDIS (French electricity network manager) electricity meter already installed on all sites. Old and new electricity meters can easily deliver data for power, consumption and intensity. \\On a simple request (and low price: 30 EUR), ENEDIS open the data flow port of their meters. With simple and low-cost electronical materials (resistances, wires, optocoupler...) and few lines of code, signal is received by Arduino, converted and saved on a SD card each minute during 2 or 3 weeks.


For long-term datalogging installation, a Raspberry Pi - with Python3, is used with a more complex architecture still in development: network connection is needed to store data on a remote server. At the moment, only few prototypes with three Arduino and one with Raspberry Pi are used to collect electricity data on four sites of the Agglomeration community.

After a year, results are great and several buildings have been optimized with cheap but specific improvements:

- decreasing and optimized subscribed power (kW),
- new heating and water production regulation or improvement,
- decreased consumption during high cost period. New electricity meters (Linky) with new code will probably increase and improve data monitoring.

**Pictures, videos**

## GP O-2

 <b>Good practice #O-2</b>		Monitoring solution	
<b>Main institution involved</b>		The department of the Pyrénées Atlantiques with the company Greengest.	
<b>Field:</b>			
<b>Energy monitoring</b>	X	<b>Financial monitoring</b>	X
<b>Location</b>		Département of Pyrennées Atlantiques / France	
		Département's buildings	
<b>Timescale</b>		(not available)	
<b>Good practices categories</b>			
<b>1-Good Practice measurement (hardware)</b>		<b>5-Good data (energy and/or financial) collections system</b>	X
<b>2-Good software</b>	X	<b>6-Good energy and/or financial indicators and/or ergonomoy</b>	
<b>3-Good financial tools</b>		<b>7-Good data analysing system</b>	
<b>4-Good organisation and management</b>	X	<b>8-Good use of data</b>	
<b>Abstract or Summary</b>	Implementation of an energy monitoring solution on the buildings of the department. The department's buildings correspond to 273 sites for 440,000 m <sup>2</sup> with 2,500 employees. Better manage its buildings, achieve financial savings and be part of Agenda 21, while involving and improving the comfort of users.		
<b>Financial scheme</b>	(not available)		
<b>Further informations</b>	<a href="http://atee.fr/sites/default/files/ATEE/MDE/repertoire_releve/2016_11_18_Guide_pratique_ATEE_solutions_telereleve.pdf">http://atee.fr/sites/default/files/ATEE/MDE/repertoire_releve/2016_11_18_Guide_pratique_ATEE_solutions_telereleve.pdf</a>		
<b>Contact details</b>	Jacques Suberbie <a href="http://greengest.fr/">http://greengest.fr/</a>		
<b>Long description</b>	The first aspect of the approach consisted in carrying out an audit of the buildings. The objective of this step was to define the strategic orientations in terms of targeting of the actions on buildings and monitoring. The second aspect concerned the setting up of a steering committee to define and arbitrate the action scenarios. The scenario chosen consisted in carrying out work on the buildings and to establish an energy monitoring		

system. Knowing that we already had a construction team, the management of the operations was piloted internally. Works on buildings amounted to € 4 million for about sixty buildings, with an average time of return on investment of 11 years. The implementation of the monitoring system was entrusted to Greengest in the form of an energy performance contract (type: conception, realization, operation and maintenance contracts). The contract includes the installation of the monitoring system, its operation, the identification and implementation of energy performance actions, all over a period of 2 years with a target of 19% gain on energy performance. The performance obligation is governed by a system of bonuses and penalties, it is a form of co-engagement between Greengest and the department. So we bought an energy saving and not a technical solution. The monitoring solution covers 57 sites for an energy bill of € 1.2M per year. Approximately 1000 equipments have been deployed to form an architecture for collecting and transmitting energy data from buildings. The back-up architecture has been adapted on a case-by-case due to the heterogeneity of existing buildings. Systemes can be remote meter reading, radio and GPRS links , the repatriation of data from building management system (BMS) or communicating controllers. All data is collected and centralized in an SaaS software (software as a service) for energy management. Some grey areas are still monitored using flying probes and ponctual analyzes.

The return on investment is estimated at 3 years (excluding internal costs). The system has been in place for more than a year, and the savings target set at 19% will be met. Among the very profitable actions, the monitoring made it possible to detect numerous anomalies setting of the equipment. For example, at a site, over-ventilation was maintained throughout the heating period while it is intended to chase heat in summer! Result: 600 € of savings each month. It is not uncommon to wait for 20% savings thanks to simple modifications of setpoints on the equipment: reduced at night, air ... Finally, energy savings are not the only benefits gained, we have also gained in speed of interventions (internal and external), reduced waste due to water leakage, increased the quality control of archives and improved the continuous monitoring of photovoltaic production.

The energy monitoring allows to have a better control our consumption and better understand the behavior of buildings. However, a period of 3 years of operation will certainly be necessary to obtain a complete results of the approach. We conduct studies in parallel to obtain the energy signatures of our main sites. Our objective is to renegotiate all operating contracts by the end of 2017 in order to switch to profit-sharing operating contracts.

**Pictures,  
videos**