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**D 4.2 1<sup>st</sup> Evaluation Report  
First phase of implementing sustainable energy projects (SEPs)  
in the ENNEREG regions**

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## 1 Introduction

This report aims to evaluate the first phase of implementing sustainable energy projects (SEPs) in the ENNEREG regions. The report covers the period from May 2010 to April 2011 (first twelve months of ENNEREG's project time). The report comprises a description of SEP measures in each region, especially with respect to Performance Indicators, which were defined with the start of the ENNEREG project.

Chapter 2 offers a more general overview of SEP activities in the ENNEREG regions (total number of SEPs initiated so far, distribution of SEP in different topics, etc.). Chapter 3 is then to evaluate and summarize the impact of SEP activities implemented by the ENNEREG regions for the 1<sup>st</sup> project year in terms of four Performance Indicators:

- Cumulative investment made by stakeholders in sustainable energy,
- Renewable energy capacity installed,
- Achieved energy savings, and
- Reductions of CO<sub>2</sub> emissions

Chapter 4 will then evaluate in more detail the implementation of SEPs per region.

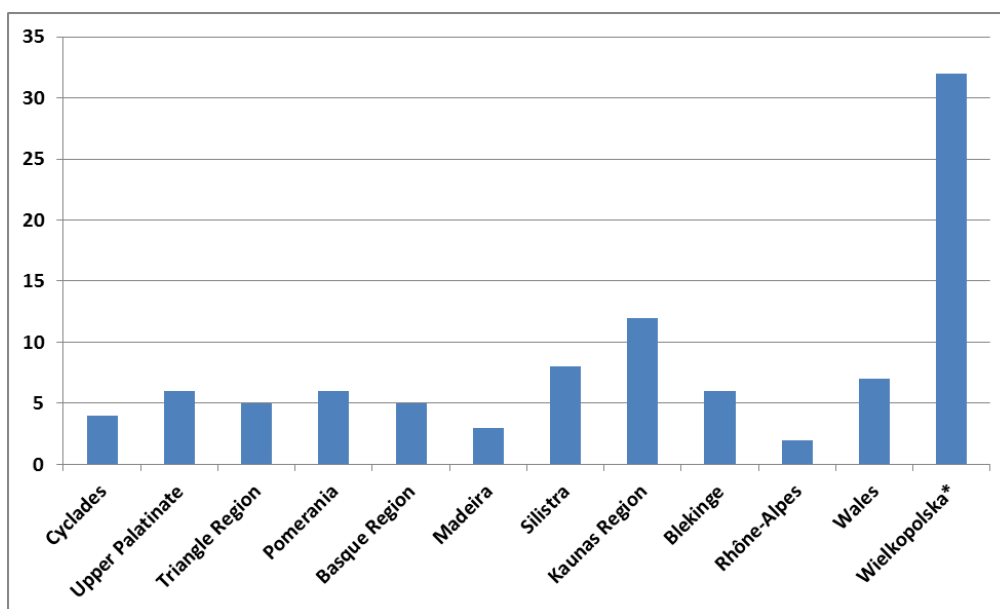
Chapter 5 describes the interim results with respect to the identification and dissemination of good practice projects in the eight ENNEREG topics, which will be published in order to be replicated elsewhere in Europe.

The final chapter 6 will assess the ENNEREG actions with regard to project co-operations, which are envisaged in relation to the good practice projects being identified and the topic-related development needs defined by each ENNEREG region.

## 2 Evaluation of Sustainable Energy Projects (SEPs) implementation in the ENNEREG regions

In the first year of the ENNEREG project all partners have initiated SEPs. The following table shows the numbers of project, which were started to be implemented under ENNEREG. The total number of SEPs so far is 94.

Figure 1: Distribution of SEPs initiated in the ENNEREG regions

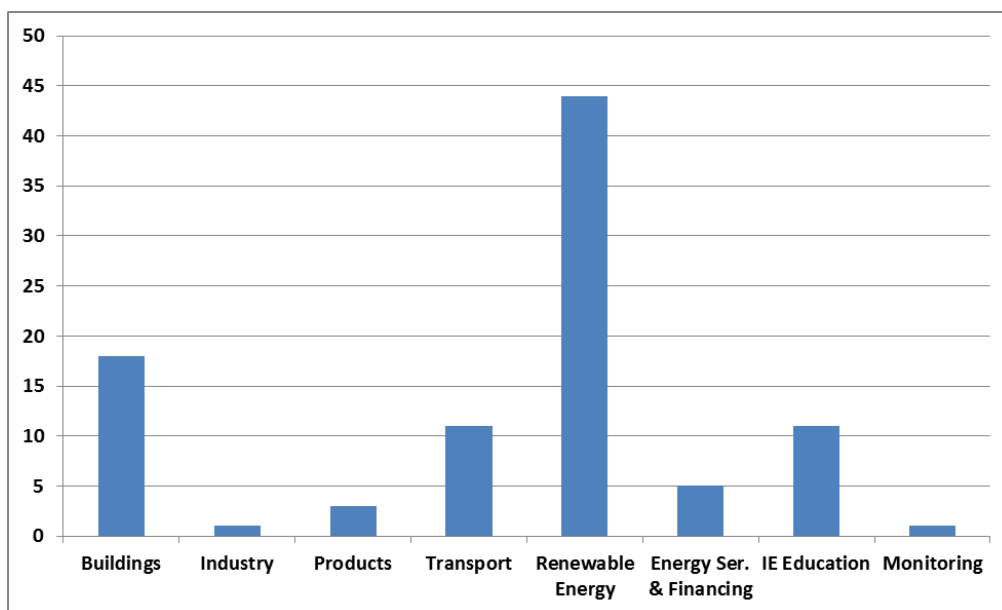


Source: ZREU 2011.

Note: \*The region of Wielkopolska submitted even more SEPs than indicated in figure 1. Additional SEPs were communicated especially in the topic “energy-efficient buildings”. However impact from SEP implementation in Wielkopolska was so far only calculated in the topics “sustainable transport” and “renewable energy”. The SEPs submitted under “energy efficient buildings” were not regarded due to a remaining need for clarification how to assign the impacts of more than 130 buildings projects to the ENNEREG project.

Figure 2 is indicating the distribution of 94 SEPs over the eight topics.

Figure 2: Distribution of SEPs between different topics

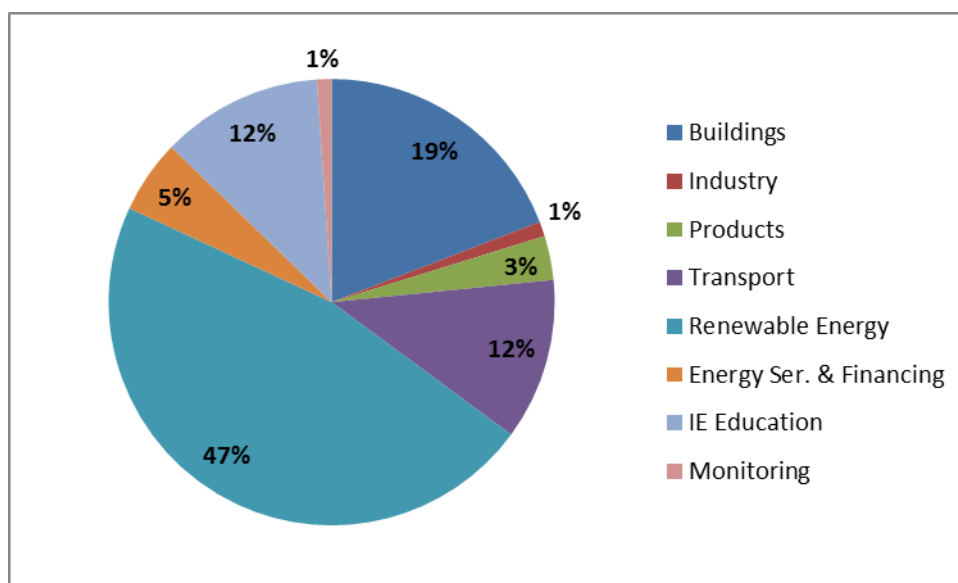


Source: ZREU 2011

Note: Depending on the number of SEPs under the topic “energy-efficient buildings” from the Wielkopolska Region, the number of SEPs under this topic might significantly change until the 2<sup>nd</sup> Evaluation Report.

The next figure illustrates the distribution of the evaluated SEPs over the eight ENNEREG topics.

Figure 3: Distribution of SEPs over eight ENNEREG topics



Source: ZREU 2011

In the first year of ENNEREG, the largest share of SEP activities in the topic ‘renewable energy’, followed by the topic ‘energy-efficient buildings’ on rank 2. SEPs in the topics ‘Sustainable Transport’ and ‘IE education’ are both ranked third. More difficulties with respect to SEP implementations are obviously related to private sector activities in the topics ‘energy-efficient industry’ and ‘energy-efficient products’. Due to the complexity of SEP implementation, there is also only one SEP under topic ‘Monitoring’.

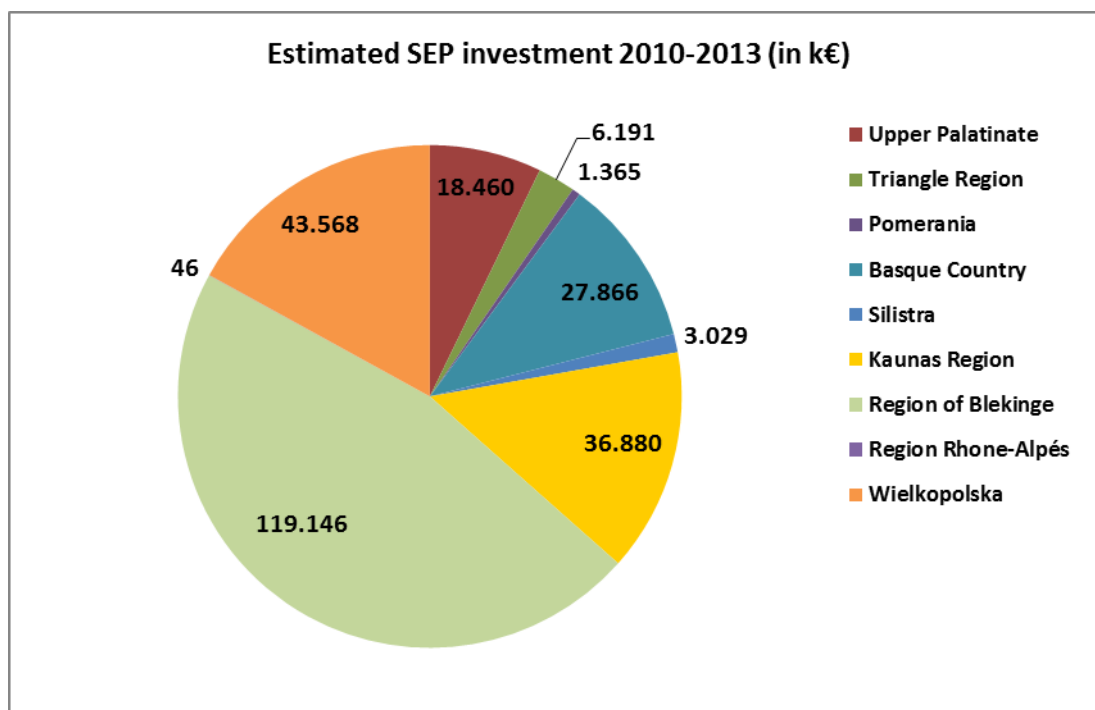
### 3 Evaluation of Performance Indicators

The total results in terms of Performance Indicators are summarized in the following figures.

#### 3.1 Cumulative investment made by stakeholders in sustainable energy

The total cumulative investment, which will be implemented for sustainable energy projects until the end of 2013 on the basis of initiated SEPs in the first ENNEREG year will amount to 256.553 k Euro. This investment is distributed over the following partners.

Figure 4: Distribution of expected cumulative investment until 2013



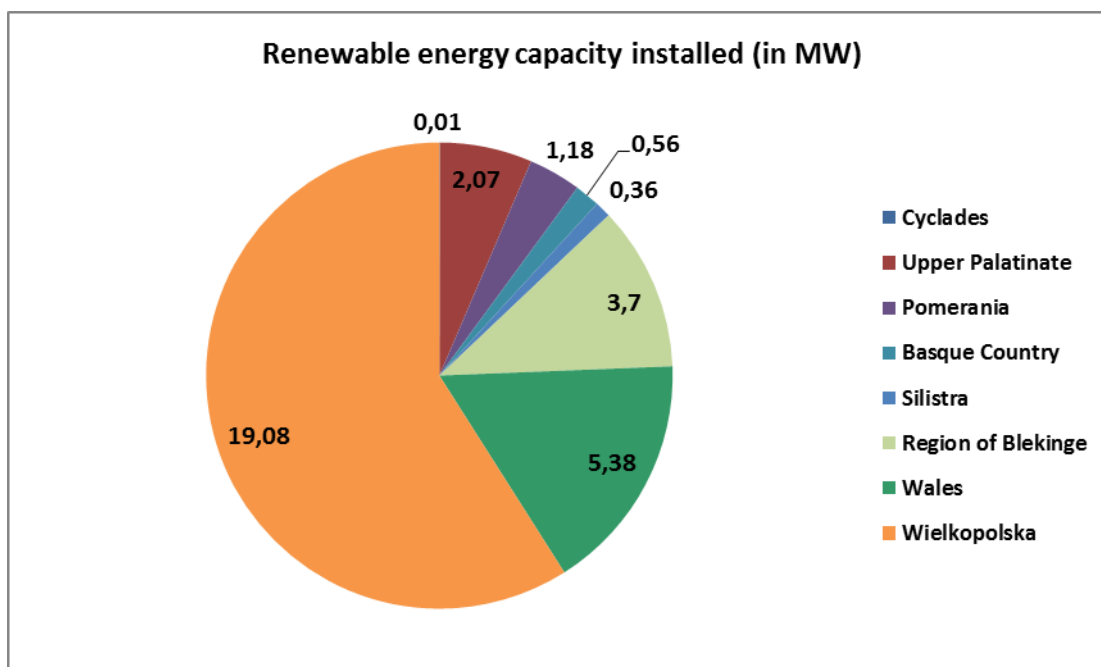
Source: ZREU 2011

Note: Figures of cumulative SEP investment have so far not been available for two regions: Cyclades and Madeira. The Welsh region indicated a total investment of 2 k Euro for IE education projects (not illustrated in figure 4). Also figures from Wielkopolska region were only calculated for the topics “sustainable transport” and “renewable energy”. For a large majority of projects submitted under the topic “energy efficient buildings “ it was not clear for the ZREU, how to assign more than 100 buildings projects to the ENNEREG project.

### 3.2 Renewable energy capacity installed

In the first year of implementation, ENNEREG supported the installation of a renewable energy capacity amounting to more than 32 MW. Figure 5 illustrates the distribution of renewable energy capacity being installed with the promotion of ENNEREG in the first project year.

Figure 5: Distribution of renewable energy capacity installed in 1<sup>st</sup> ENNEREG Year



Source: ZREU 2011

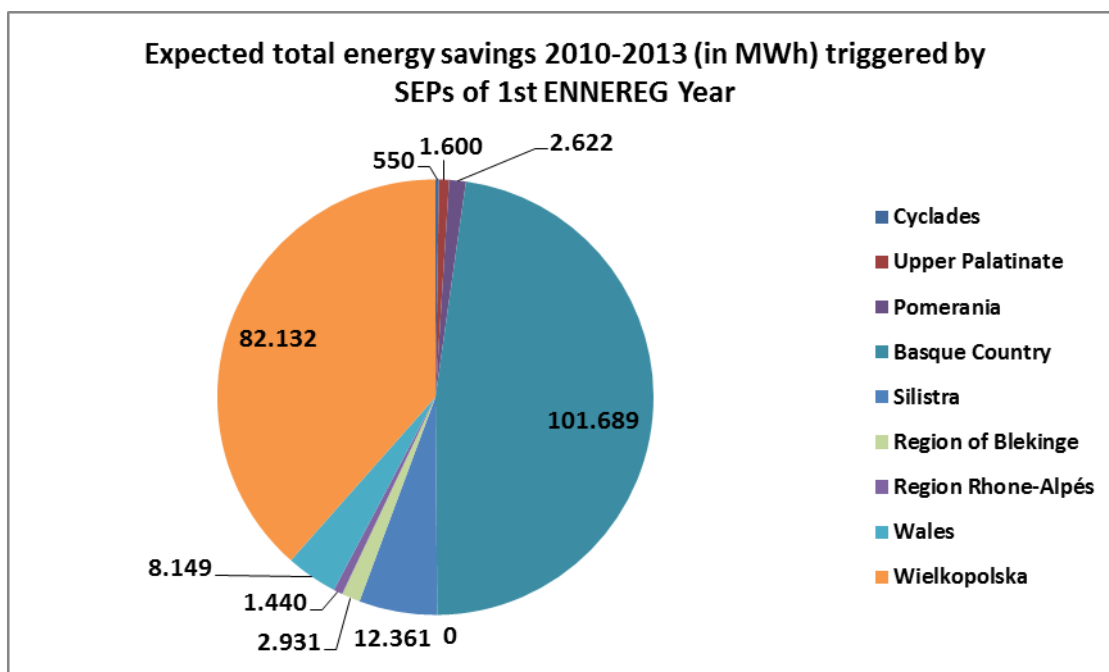
Note: The installation of renewable energy capacity has so far not been supported in four regions: Triangle Region, Madeira, Kaunas Region and Rhone-Alpés.

### 3.3 Achievable energy savings

The total of energy savings, which can be expected until the end of 2013 from SEP implementation being promoted by ENNEREG in the 1<sup>st</sup> project period, is about 213.470 MWh.

The next figure is indicating the distribution of achievable energy savings between participating ENNEREG regions.

Figure 6: Distribution of energy savings achieved in 1<sup>st</sup> ENNEREG Year



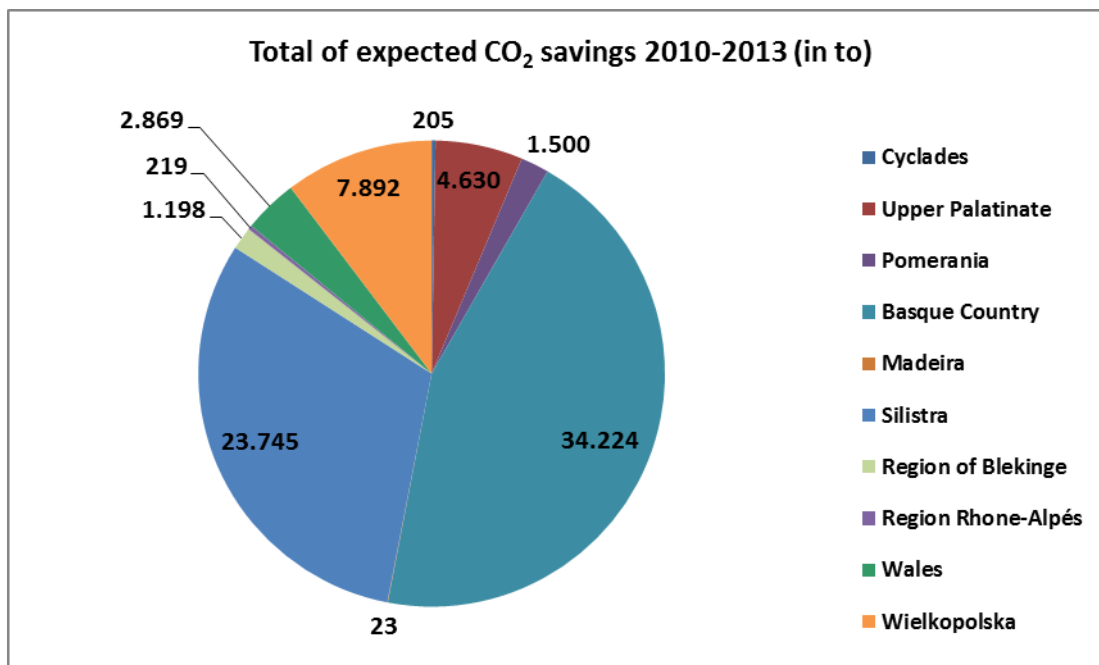
Source: ZREU 2011

Note: Figures of total energy savings being realized by the implementation of SEPs have so far not been available for three regions: Triangle Region, Madeira and Kaunas Region. Also the impact from SEP implementation in the Wielkopolska region was only calculated for topics “sustainable transport” and “renewable energy”. The SEPs submitted under the topic “energy efficient buildings” were so far not regarded in the calculations due to a remaining need for clarification how to assign the impacts of more than 130 buildings projects to the ENNEREG project.

### 3.4 Reductions of CO<sub>2</sub> emissions

The total of CO<sub>2</sub> emission reductions, which can be expected until the end of 2013 from SEP implementation being promoted by ENNEREG in the 1<sup>st</sup> project period, is about 77 kt. The figure below is indicating the distribution of achievable CO<sub>2</sub> emission savings between participating ENNEREG regions.

Figure 7: Estimation of expected total CO<sub>2</sub> savings triggered by SEP in 1<sup>st</sup> ENNEREG year



Source: ZREU 2011

Note: A calculation of CO<sub>2</sub> emission reductions was not available from two regions, i.e. Triangle Region and Kaunas Region. Also the impact from SEP implementation in the Wielkopolska region was only calculated for topics “sustainable transport” and “renewable energy”. The SEPs submitted under the topic “energy efficient buildings” were so far not regarded in the calculations due to a remaining need for clarification how to assign the impacts of more than 130 buildings projects to the ENNEREG project.

## 4 Region-specific evaluation of SEP implementation

### 4.1 Cyclades (Greece)

#### 4.1.1 Focus of SEP activities (topic)

SEP activities in Cyclades focused on the ENNEREG topics “energy-efficient buildings”, “energy-efficient products” and “IE education”. In these three topics, four SEPs have so far been supported by ENNEREG. Two projects were initiated in the “IE education” topic, and one project each in the two other topics.

The most successful SEP in terms of contributing to the achievement of Performance Indicators will be the implementation of energy efficiency measures and renewable energy technologies in ten preliminary and secondary school buildings. The ten schools are located in the islands of Andros, Kea, Naxos and Sifnos. The energy renovation work is expected to take place in 2012.

Apart from this larger school renovation project, also two very effective IE education projects were initiated. One project was an education program for local authorizes. The project titled “Energy Academy” is a program developed to offer advanced training on energy issues for municipal staff of the Aegean Islands region. The program aims to assist islands in their obligations (e.g. Covenant of Mayors, Pact of Islands) and their goals regarding CO<sub>2</sub> emissions’ reduction through capacity building. The other IE education project titled “Climate Caravan” is to develop and spread awareness and attention for energy efficiency issues and the best practices to pupils and students. Due to difficulties in calculating the impact of such soft training on energy savings, installations of renewable energy technologies and CO<sub>2</sub>-reductions, no quantitative figures were calculated below for the implementation of these two projects in Cyclades.

#### 4.1.2 Evaluation of SEP activities with reference to Performance Indicators

With regard to the Performance Indicators defined with the start of the ENNEREG project, the following will be achieved by the region of Cyclades.

Table 1: PI achievements of the Region of Cyclades

| Project Achievements                          | 2010  | 2011  | 2012   | 2013   | 2014 and later |
|---|-------|-------|--------|--------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 0     | 0     | 133,80 | 133,80 | 133,80         |
| Energy savings heat p.a. (MWh/year)           | 0     | 0     | 141,10 | 141,10 | 141,10         |
| Renewable energy capacity installed p.a. (MW) | 0     | 0     | 0,01   | 0,00   | 0,00           |
| CO <sub>2</sub> -savings (to/year)            | 12,14 | 12,14 | 90,14  | 90,14  | 90,14          |

Note: Figures for 2011 may still change due to the running year.

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 267,6 MWh
- Total energy savings heat (in MWh): 282,2 MWh
- Total capacity of renewable energy installed (in MW): 0,01 MW
- Total of CO<sub>2</sub>-savings (in to): 205 to.

Due to reasons of data confidentiality, data on the PI of annual investment is currently is not available.

## 4.2 Upper Palatinate (Germany)

### 4.2.1 Focus of SEP activities (topic)

In the region of Upper Palatinate, also four SEP projects were initiated in the context of ENNEREG. Two of these projects relate to the topic “energy services and financing”, one project is currently developed in topic “energy efficient buildings” and another one was finalized in the topic renewable energies.

The most effective projects for complying with the defined Performance Indicators were two energy service projects comprising the construction and operation of biomass installations in two projects (biomass installation and district heating in Waldsassen and Mitterteich). In both projects, the heat supply of public buildings (schools) is modernized biomass heating stations.

Another important regional SEP is the planning and current construction of an energy-efficient and nearly carbon-neutral secondary school in Lappersdorf, which is located in the District of Regensburg. This project combines the integration of an innovative heating and cooling system (using geothermal energy and heat pumps) in combination with modern architecture for buildings planned to achieve carbon neutrality.

### 4.2.2 Evaluation of SEP activities with reference to Performance Indicators

So far the SEP activities in the Upper Palatinate contributed to the following PI results.

Table 2: PI achievements of the Region of Upper Palatinate

| Project Achievements                          | 2010   | 2011    | 2012    | 2013    | 2014 and later |
|---|--------|---------|---------|---------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 0,00   | 0,00    | 0,00    | 0,00    | 0,00           |
| Energy savings heat p.a. (MWh/year)           | 0,00   | 0,00    | 800,00  | 800,00  | 800,00         |
| Renewable energy capacity installed p.a. (MW) | 1,34   | 0,60    | 0,13    | 0,00    | 0,00           |
| CO <sub>2</sub> -savings (to/year)            | 500,00 | 1130,00 | 1500,00 | 1500,00 | 1500,00        |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 0 MWh
- Total energy savings heat (in MWh): 1.600 MWh
- Total capacity of renewable energy installed (in MW): 2,07 MW
- Total of CO<sub>2</sub>-savings (in to): 4.630 to.

Based on current SEP activities, the total annual investment of SEP activities in the region of Upper Palatinate can be expected to sum up to 18.460 kEuro until the end of 2013.

### **4.3 Triangle Region (Denmark)**

#### **4.3.1 Focus of SEP activities (topic)**

In the Triangle Region, until today five SEPs were supported under ENNEREG. Three of them have to be subsumed under the “sustainable transport” topic, the two other ones under the “renewable energy” topic.

The sustainable transport projects have a clear focus on e-mobility. The objective of one very successful project is to establish an infrastructure for electric cars (e.g. charging stations) and thereby assist to a breakthrough for the use of electric cars especially by municipal employees. A charging stand has been developed through the project. Another SEP is the development of a planning instrument, i.e. the Traffic Model, which is to be used in spatial planning for the traffic infrastructure. A third SEP of the Triangle Region, assisting the expansion of electric cars, is the project ‘Test en elbil’. In this SEP, private households can try an electric car for a period of 3 months for free. The project is running for 2 years and involves 300 electric cars.

Under the “renewable energy topic”, the SEP activities are concentration on the use of biogas in energy generation. In the first renewable energy SEP, the ‘Business plan for biogas in the Triangle Region’, the regional bodies are developing a business plan for biogas from liquid biomass in cooperation with different actors (e.g. farmers, utilities, etc). One objective is to analyze if there is any economic surplus in building and producing biogas in the Triangle Region. In the other biogas SEP titled ‘Renescence’, the Danish energy utility DONG energy aims to build a full scale plant that is able to transform unsorted household waste into biogas (processing of 800 tonnes p. day).

#### **4.3.2 Evaluation of SEP activities with reference to Performance Indicators**

Until now, no concrete figures are available in terms of energy savings, renewable energy capacity installed and CO<sub>2</sub> emission reductions achieved.

Until the end of 2013, the SEP investments initiated in the Triangle region can so far be estimated to amount to 6.191 kEuro, mainly invested in the DONG project.

## 4.4 Pomerania (Poland)

### 4.4.1 Focus of SEP activities (topic)

In Pomerania, six SEPs could be initiated in the first ENNEREG year. Four projects were initiated under the topic “energy efficient buildings”, the two other projects are implemented in the topic “renewable energies”.

The four SEPs of Pomerania in the “energy efficient buildings” topic mainly on investments for retrofitting of school buildings. The most effective SEP in terms of energy and CO<sub>2</sub> emission savings so far was the retrofitting of a school hostel in Gdansk. Besides the insulation of roofs / walls and the modernization of windows, also PV technology was integrated to improve the energy balance of the building.

The two renewable energy projects in Pomerania are aimed to increase the use of biomass in energy generation. One of the two projects is to retrofit a boiler station at a hospital from oil to wood chips. The other SEP will be conducted in the Warmia-Murzia region as twinning region of Pomerania: in this project an even larger boiler modernization will be implemented at a hospital in Olsztyn with an installed capacity of 840 kW for a new biomass boiler.

### 4.4.2 Evaluation of SEP activities with reference to Performance Indicators

Until now, the SEP activities in Pomerania contributed to the following PI results.

Table 3: PI achievements of the Region of Pomerania

| Project Achievements                          | 2010 | 2011   | 2012   | 2013   | 2014 and later |
|---|------|--------|--------|--------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 0    | 0      | 0      | 0      | 0              |
| Energy savings heat p.a. (MWh/year)           | 0    | 874    | 874    | 874    | 874            |
| Renewable energy capacity installed p.a. (MW) | 0,00 | 1,18   | 0,00   | 0,00   | 0,00           |
| CO <sub>2</sub> -savings (to/year)            | 0    | 500,24 | 500,24 | 500,24 | 500,24         |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 0 MWh
- Total energy savings heat (in MWh): 2.622 MWh
- Total capacity of renewable energy installed (in MW): 1,18 MW
- Total of CO<sub>2</sub>-savings (in to): 1.500 to.

Until the end of 2013, the total annual investment of SEP activities in the region of Pomerania are expected to amount to 1.365 kEuro.

## 4.5 Basque Country (Spain)

### 4.5.1 Focus of SEP activities (topic)

The Basque Country initiated five SEPs, with one SEP in each of the topics “energy-efficient buildings”, “energy efficient industry”, “energy efficient products”, “sustainable transport” and renewable energies. In comparison with other ENNEREG regions, the excellent performance specifically with respect to the indicators energy savings (electricity / heat) and CO<sub>2</sub> reductions is outstanding.

The main share of this excellent result is the impact of one SEP in the industrial sector (energy efficient industry) and two public support schemes, with one being subsumed under the “energy-efficient buildings” topic and the other one under the “energy efficient product sector.

The industrial SEP is the construction and operation of an efficient CHP installation in the forge industry, located in Bergara. The installation is operated on the basis of natural gas.

The SEP under the “energy efficient product” topic is a public program of the Basque country aimed to replace old inefficient appliances by A and A+ category appliances through economic incentives. It was set in 2008 and it is carried out every year. Around 30,000 old appliances are replaced every year through this program. More than 50 % of total electricity saving result of the Basque Country are related to the implementation of this program (and about 30 % of the total CO<sub>2</sub> emission reduction of the region until now).

Another very effective SEP is a public window replacement program targeted at the residential sector. This grant program covering a maximum of 22% of the cost of window replacement specifically contributed to the excellent total result of heat savings (34 %). The implementation of this program also contributed to achieving nearly 28 % of CO<sub>2</sub> emission savings.

### 4.5.2 Evaluation of SEP activities with reference to Performance Indicators

In the first ENNEREG year, the SEP activities in the Basque Country contributed to the following PI results.

Table 4: PI achievements of Basque Country

| Project Achievements                           | 2010    | 2011     | 2012    | 2013    | 2014 and later |
|--|---------|----------|---------|---------|----------------|
| Energy savings electricity p. a. (MWh/year)    | 11.412  | 14.107   | 5.157   | 5.157   | 5.157          |
| Energy savings heat p. a. (MWh/year)           | 13.480  | 19.976   | 20.140  | 12.260  | 12.260         |
| Renewable energy capacity installed p. a. (MW) | 0,00    | 0,56     | 0,00    | 0,00    | 0,00           |
| CO <sub>2</sub> -savings (to/year)             | 9582,28 | 12137,33 | 7421,85 | 5082,85 | 5082,85        |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 35.833 MWh
- Total energy savings heat (in MWh): 65.856 MWh
- Total capacity of renewable energy installed (in MW): 0,56 MW
- Total of CO<sub>2</sub>-savings (in to): 34.224 to.

Until the end of 2013 the total annual investment of SEP activities in the region of Basque country is expected to amount to 27.866 kEuro.

## 4.6 Madeira (Portugal)

### 4.6.1 Focus of SEP activities (topic)

The SEP activities of the region of Madeira were so far focused on the topic “IE Education”. Two of the projects were education campaigns mainly addressed to the general public, with a focus on pupils and students. One of both SEPs was an awareness campaign about energy efficiency and renewable energies usage. The objective of this campaign was to inform and educate on the efficient use of energy and its impacts in the environment, focusing the actions on our day by day behavior. Until 20 May 2011 14 activities were carried out, reaching about 450 people, mainly children, youth, but also adults and seniors. Ten more campaigning actions were planned until the end of the summer 2011.

Another SEP was the H2 exhibition held in the Museum da Casa da Luz (Electricity museum) in February 2011. This exhibition was visited by about 1.100 people, including pupils and general public. The exhibition then moved on to the Centro de Ciência Viva do Porto Moniz (Science museum). The objective of this exhibition is to inform about the use of the hydrogen or production of electricity.

A third SEP in Madeira was an eco-driving campaign. This workshop is addressed to driving school managers and teachers and aims to introduce eco-driving concepts into the driving courses. Key participants of these workshops are local municipalities, commercial and industrial associations and driving schools representatives.

### 4.6.2 Evaluation of SEP activities with reference to Performance Indicators

Related to the Performance Indicators, the partners of Madeira are facing difficulties in calculating reliable figures as regards energy and CO<sub>2</sub> savings achieved by these soft SEP measures. Therefore the table below can only provide for rough estimation of impacts achieved from SEP implementation so far.

Table 5: PI achievements of Madeira

| Project Achievements                          | 2010 | 2011 | 2012 | 2013 | 2014 and later |
|---|------|------|------|------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 0,00 | 0,01 | 0,01 | 0,01 | 0,01           |
| Energy savings heat p.a. (MWh/year)           | 0,00 | 0,00 | 0,00 | 0,00 | 0,00           |
| Renewable energy capacity installed p.a. (MW) | 0,00 | 0,00 | 0,00 | 0,00 | 0,00           |
| CO <sub>2</sub> -savings (to/year)            | 0,00 | 7,78 | 7,78 | 7,78 | 7,78           |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 0,03 MWh
- Total of CO<sub>2</sub>-savings (in to): 23 to.

## 4.7 Silistra (Bulgaria)

### 4.7.1 Focus of SEP activities (topic)

The SEP activities in the region of Silistra were so far focused on three topics, i.e. “energy efficient buildings”, “renewable energies” and “energy services and financing. In total, eight SEPs were promoted.

Four of them have to be subsumed under the topic “energy efficient buildings”. The most effective SEP promoted in Silistra under this topic is the refurbishment of educational building (kindergartens and schools) in the municipality of Silistra by different efficiency measures and the installation of solar thermal and PV technology. The objective of this SEP is to achieve a 20 % reduction of heating and electricity costs by implementation of an ESCO approach.

There were also two SEPs supported under the topic “renewable energies”. One of them is the installation of a solar thermal system in in the elderly people’s home in Ajdemir Village, Silistra Municipality. In this project electrical heating of domestic hot water is replaced by the installation of 63 sq.m solar thermal collectors.

Finally, two projects were implemented in the topic “energy services and financing”. One of them is the construction of a gas distribution system in the town of Silistra and the adjacent villages of Ajdemir and Kalipetrovo. The construction of a respective gas grid is supposed to substitute at a large scale electricity and coal for heating purposes in industries and households, thus contributing significantly to the reduction of CO<sub>2</sub> emissions. This SEP is supposed to contribute with a share of nearly 84 % to the total of CO<sub>2</sub> emission reductions, which can so far be achieved by all SEPs between 2010 and 2013 (appr. 23.745 to).

### 4.7.2 Evaluation of SEP activities with reference to Performance Indicators

In the first ENNEREG year, the SEP activities in the region of Silistra contributed to the following PI results.

Table 6: PI achievements of Silistra

| Project Achievements                          | 2010 | 2011 | 2012  | 2013  | 2014 and later |
|---|------|------|-------|-------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 0    | 0    | 939   | 1.004 | 1.004          |
| Energy savings heat p.a. (MWh/year)           | 0    | 0    | 5.209 | 5.209 | 5.209          |
| Renewable energy capacity installed p.a. (MW) | 0,00 | 0,00 | 0,16  | 0,20  | 0,15           |
| CO <sub>2</sub> -savings (to/year)            | 0    | 0    | 8497  | 15248 | 28520          |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 1.943 MWh
- Total energy savings heat (in MWh): 10.418 MWh
- Total capacity of renewable energy installed (in MW): 0,36 MW
- Total of CO<sub>2</sub>-savings (in to): 23.745 to.

Until the end of 2013 the total annual investment of SEP activities in the region of Silistra is expected to amount to 3.029 kEuro.

## **4.8 Kaunas Region (Lithuania)**

### **4.8.1 Focus of SEP activities (topic)**

The Kaunas region promoted 12 SEPs in the first ENNEREG year, covering four topics. Four SEPs were supported in the topic “energy efficient buildings”. The four projects mainly dealt with the retrofitting of public buildings (e.g. kindergartens, primary schools, museums, health care centres). Until now, project achievements of these buildings projects have only been evaluated for the PI “Cumulative investments made by stakeholders (see below). So far, the other PI’s have not been evaluated. This is expected to be done later in the project.

Two SEPs covered the Topic “Sustainable Transport”. One is targeted to improving the bicycle infrastructure by preparing special plans for bicycle paths in Akademijos, Ringaudai and Kačerginė settlements. The other more innovative SEP was the development of an online-based ticket service and information services in Kaunas City. This was the most successful public transport project, latter disseminated in Klaipeda City.

Also three projects were implemented in the topic “renewable energy”. These three SEPs were aimed to expand the use of solid biomass. One of the projects was the modernization of Petrašiūnai power plant, the second one the reconstruction of Inkaras district boiler-house, and the third one the modernization of boilers at the Campus of Lithuanian University of Agriculture.

Finally, three SEPs covered the topic “IE Education”. These are mainly study programs and courses related to sustainable energy use. These study programs are offered by Kaunas University of Technology, by Vytautas Magnus University and by the Lithuanian University of Agriculture.

### **4.8.2 Evaluation of SEP activities with reference to Performance Indicators**

As stated earlier, no quantified data is available until now in terms of energy savings, renewable energy capacity installed and CO<sub>2</sub> emission reductions achieved.

Based on current SEP activities, the total annual investment of SEP activities in the region of Kaunas can be expected to sum up to the amount of 36.880 kEuro until the end of 2013.

## 4.9 Region of Blekinge (Sweden)

### 4.9.1 Focus of SEP activities (topic)

The SEP activities in the region of Blekinge were so far focused on four topics, i.e. “energy efficient buildings”, “sustainable transport”, “renewable energies” and “energy services and financing. In total, six SEPs were promoted. The focus of SEP activities was laid on the renewable energy topic with three projects. In the other three topics, one SEP was promoted.

The focus of the SEP in the topic “energy buildings” was the construction of an energy-efficient building with energy consumption 50% lower than the existing building code. The excellent energy performance of the building is achieved with passive house technology. The multifamily house was built with massive wood construction in 8 storeys. The total investment was very large with 112.00 kEuro. This SEP is the reason for the large share of the Region of Blekinge in the PI “Cumulative investments made by stakeholders”, with this project contributing to the total ENNEREG investments by more than 45 %.

The sustainable transport SEP focused on the project subcategory of improving mobility management by increasing the bicycle modal share of commuting trips. The project titled ‘Sydost Trampar’ is a bicycle competition for working places. Organized by Energiekontor Sydost, bicycle teams compete with each other in their every day trip to work. The SEP is to motivate and stimulate cycling instead of using the car for commuting to work. The idea of the project originally comes from the Denmark and was adapted with good results in the region of Scania in Sweden in 2008. The Energy Agency for Southeast Sweden implemented it for the first time in 2010.

The renewable energy projects of Blekinge focus on wind and smaller building-integrated PV installations. The most effective SEP in terms of the installed renewable capacity and the CO<sub>2</sub> emissions reductions is the small wind farm Säby, including the installation of four wind turbines with a total installed a capacity 3,2 MW.

A very interesting SEP was also promoted in the topic “energy services and financing”. This project is the construction of a new district heating system, financed and operated by a community-based energy association. This SEP implemented in Södra ljunga, involved the installation of one wood chip boiler with 300 kW and one pellets boiler with 250 kW. The distribution network consists of 1100 m of pipes. The project is implemented by a local initiative of 4 farmers. The wood chips used for operating the system are available locally. In comparison with oil, heating costs were reduced by 50 %.

### 4.9.2 Evaluation of SEP activities with reference to Performance Indicators

Until now, the SEP activities in Blekinge contributed to the following PI results.

Table 7: PI achievements of the Region of Blekinge

| Project Achievements                          | 2010  | 2011  | 2012  | 2013  | 2014 and later |
|---|-------|-------|-------|-------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 164   | 50    | 50    | 50    | 50             |
| Energy savings heat p.a. (MWh/year)           | 654   | 654   | 654   | 654   | 654            |
| Renewable energy capacity installed p.a. (MW) | 3,70  | 0,00  | 0,00  | 0,00  | 0,00           |
| CO <sub>2</sub> -savings (t/year)             | 341,5 | 285,5 | 285,5 | 285,5 | 285,5          |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 314 MWh
- Total energy savings heat (in MWh): 1.962 MWh
- Total capacity of renewable energy installed (in MW): 3,7 MW
- Total of CO<sub>2</sub>-savings (in to): 1.198 to.

Until the end of 2013, the total annual investment of SEP activities in the region of Blekinge can be expected to amount to 119.146 kEuro on the basis of SEP activities initiated until now.

#### 4.10 Region of Rhône-Alpes (France)

##### 4.10.1 Focus of SEP activities (topic)

The Region of Rhône-Alpes promoted 2 SEPs in the first ENNEREG year, covering two topics. One SEP was supported in the topic “energy efficient buildings”, the other SEP in the topic “monitoring”.

The SEP in the topic “energy efficient buildings” is aimed to improve the energy efficiency of public buildings. The SEP is a 2 days training for technicians of contracting authorities. The objective of the training is to offer capacity building in setting up energy efficiency criteria in call for tenders in contracting projects. The target group for the seminar is representatives from local authorities. The trainings will be held in small groups (Maximum of 15 people).

Under the topic monitoring, the second SEP is to establish a regional method ensuring an effective approach for calculating the SEAP baseline for local authorities in the context of the CoM initiative. This would be done automatically through the database of the regional GHG and energy observatory. Such an inventory is usually calculated by private consultants. It induces large costs for municipalities, in average 10 000 Euros. Currently, there are 2.880 local authorities in the Region Rhône-Alpes. Therefore the successful finalization of this SEP could save about 10.000 € \*2880= 28.800 k Euros for all local authorities of the region. Success will depend on data required for the SEAP baseline inventory. There is already one data source, which is OREGES. This database offers data for the main CoM categories but probably not the sub-categories data (not compulsory for the CoM but important to elaborate the SEAP). The success will also depend on data quality collected by local authorities.

##### 4.10.2 Evaluation of SEP activities with reference to Performance Indicators

In the first ENNEREG year, the SEP activities Region of Rhône-Alpes contributed to the following PI results.

Table 8: PI achievements of the Region of Rhône-Alpes

| Project Achievements                          | 2010 | 2011   | 2012   | 2013   | 2014 and later |
|---|------|--------|--------|--------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 0,00 | 120,00 | 120,00 | 240,00 | 240,00         |
| Energy savings heat p.a. (MWh/year)           | 0,00 | 240,00 | 240,00 | 480,00 | 480,00         |
| Renewable energy capacity installed p.a. (MW) | 0,00 | 0,00   | 0,00   | 0,00   | 0,00           |
| CO <sub>2</sub> -savings (to/year)            | 0,00 | 54,72  | 54,72  | 109,44 | 109,44         |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 480 MWh
- Total energy savings heat (in MWh): 960 MWh
- Total of CO<sub>2</sub>-savings (in to): 219 to.

Until the end of 2013 the total annual investment of SEP activities in the region of Rhône-Alpes are expected to amount to 46 kEuro.

#### **4.11 Wales (United Kingdom)**

##### **4.11.1 Focus of SEP activities (topic)**

The region of Wales region has so far promoted 7 SEPs in the first ENNEREG year, covering four topics. Two SEPs were supported in the topic “energy efficient buildings”, one SEP in the topic “energy efficient product”, two SEPs under renewable energy and three SEPs in topic IE Education.

In the buildings topic, both SEPS were targeted at improving energy efficiency in public buildings. The first buildings project is the Broadhaven Baptist Chapel. In this building, works are to improve energy efficiencies in the building and to install PV's to generate electricity. The second of both projects is the Mostyn Hall Estate. The objective in this SEP is to realize fuel self-sufficiency and a reduction in carbon emissions by installing a biomass heating system using broadleaf woodland. The system comprises a high-efficiency 150kW KWB woodchip boiler with 2000 litre buffer tank. Day to day running of the boiler is fully automatic with woodchip fuel being transferred to the boiler according to the demands of the separate heat loads. Automatic combustion is optimized using the lambdatronic control system, which automatically adjusts to varying fuel qualities up to 50% moisture content.

There is also one SEP planned in the “energy-efficient product”, aimed at promoting the use of energy efficient appliances. The project will encourage via a retail promotion, the employees of at least 2 major employers in Wales to purchase energy efficient appliances.

SWEA is also promoting two SEPs in the topic “renewable energies”. The first RES project is the Llangattock Green Valleys Project. The objective of this very innovative project is to make the village Llangattock carbon neutral via hydro, micro wind, PV, AD and airsource installations. The second SEP is a hydro power project targeted to extend on micro-hydro schemes from the Brecon Beacons National Park to the rest of Wales. The instruments for realizing this target are: launch events, publication of case studies on-line, installation of hydro schemes outside of the National Park.

The majority of SEPs has so far been promoted in the “IE education” topic. The most effective of three projects in terms of contributing to the PIs is the Supply Chain Development Programme. Initiated by the Energy Saving Trust, is it aimed to develop the microgeneration supply chain so that it can meet its market potential. For this general objective it supports installers to reach industry standards in microgeneration (Microgeneration Certification Scheme). In Wales, EST and SWEA assisted 29 companies to become microgeneration certification scheme (MCS) certified.

#### 4.11.2 Evaluation of SEP activities with reference to Performance Indicators

In the first ENNEREG year, the SEP activities in the Wales Region contributed to the following PI results.

Table 9: PI achievements of Wales

| Project Achievements                          | 2010  | 2011   | 2012  | 2013  | 2014 and later |
|---|-------|--------|-------|-------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 174   | 2,004  | 2,829 | 2,829 | 2,829          |
| Energy savings heat p.a. (MWh/year)           | 12    | 42     | 130   | 130   | 130            |
| Renewable energy capacity installed p.a. (MW) | 0,35  | 2,69   | 1,17  | 1,17  | 1,17           |
| CO <sub>2</sub> -savings (to/year)            | 197,1 | 1507,8 | 582   | 582   | 582            |

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

- Total energy savings electricity (in MWh): 7.836 MWh
- Total energy savings heat (in MWh): 214 MWh
- Total capacity of renewable energy installed (in MW): 5,38 MW
- Total of CO<sub>2</sub>-savings (in to): 2.869 to.

Until the end of 2013 the total annual investment of SEP activities in the region of Wales are expected to amount to 2 kEuro.

#### 4.12 Wielkopolska (Poland)

##### 4.12.1 Focus of SEP activities (topic)

The Wielkopolska Region has so far submitted SEPs in three topics, i.e. “energy efficient buildings”, “sustainable transport” and “renewable energy”. More than 130 SEPs were filed for the topic “energy efficient buildings”, four SEPs in the topic “sustainable transport” and 28 SEPs in the topic “renewable energy”.

A large share of the SEPs under the buildings topic is targeted to improve energy efficiency of public buildings. A majority of these projects is financed by European Structural Funds. Due to no project specific information submitted with respect to impacts on PIs, the building SEPs of Wielkopolska were so far not considered in the calculation of the PI performance. For considering the impact of these SEPs, ZREU still sees the requirement to clarify with UMWW how to assign the impacts of this large number of SEPs to the ENNEREG project.<sup>1</sup>

However, four SEPs in the topic “sustainable transport” and 28 SEPs in the “renewable energy” were considered in the subsequent calculation, although no project-specific evaluation of the SEPs has so far been submitted by the Wielkopolska region. The evaluation of PIs was only submitted by the delivery of aggregated figures in each PI category.

<sup>1</sup> The total number of SEPs submitted under ENNEREG from all partners currently is 94. If the SEPs of the buildings topic from Wielkopolska region would be considered, the total number would rise to 226, with Wielkopolska then accounting for 164 SEPs (i.e. more than 72 %).

#### 4.12.2 Evaluation of SEP activities with reference to Performance Indicators

For the total ENNEREG project time (2010-2013), the following PI achievements can be expected on the basis of project activities initiated by now:

Table 10: PI achievements of Wielkopolska

| Project Achievements                          | 2010   | 2011   | 2012   | 2013   | 2014 and later |
|---|--------|--------|--------|--------|----------------|
| Energy savings electricity p.a. (MWh/year)    | 16.438 | 16.438 | 16.438 | 16.438 | 16.438         |
| Energy savings heat p.a. (MWh/year)           | 4.095  | 4.095  | 4.095  | 4.095  | 4.095          |
| Renewable energy capacity installed p.a. (MW) | 4,77   | 4,77   | 4,77   | 4,77   | 4,77           |
| CO <sub>2</sub> -savings (to/year)            | 1973   | 1973   | 1973   | 1973   | 1973           |

On the basis of project activities initiated by now, the following PI achievements can be expected for the total ENNEREG project time 2010-2013 (without SEP activities in topic “energy-efficient buildings”):

- Total energy savings electricity (in MWh): 65.752 MWh
- Total energy savings heat (in MWh): 16.380 MWh
- Total capacity of renewable energy installed (in MW): 19,08 MW
- Total of CO<sub>2</sub>-savings (in to): 7892 to.

Until the end of 2013 the total investment from SEP activities initiated so far in the region of Wielkopolska is expected to amount to 43.568 kEuro (without SEPs in topic “energy efficient buildings”).

## 5 Good Practice Projects

One important task of the ENNEREG project is to identify innovative SEPs in the regions, which can serve as good practice projects for a broader dissemination and as a starting point for more concrete cooperation activities between the ENNEREG regions. The objective of these good practice projects is to serve as a role model or blue print for other European Regions (e.g. the Twinning Regions in ENNEREG). Accordingly the respective good practices should be copied and replicated in other European regions and thus help to achieve the targets of European Climate Policy. For this task, a standardized leaflet was developed by ZREU in cooperation with CPL, which is to be used by the ENNEREG partners for illustrating the contents of their good practice project to a wider public.

Figure 8: Example of ENNEREG Good Practice

**E-Car-sharing Company - IBILEK**  
Basque Country, Spain

**Summary**

A company has been created in the Basque Country, Ibiltek, to implement a new car sharing system using sustainable vehicles, providing access to electrical and plug-in hybrid vehicles with sizes and features suited to the different needs of mobility. Vehicles can be reserved by the hour or day via internet and call centers.

To become member of the society, the user must sign an annual contract with Ibiltek, paying a monthly fee, and another fee for each use of the car. Link to Ibiltek web page to find out more about it: [www.ibilek.es/en/](http://www.ibilek.es/en/)

**Location**

**Differences with conventional renting and car ownership**

Unlike conventional renting, it will allow users to book the car for short periods of time, with no need to fill paperwork each time a reservation is made. The main advantages are the following:

- It is convenient for people who need a car occasionally, or as a second car.
- Flexibility of use: from one hour to several days.
- You pay only the time of use and the kilometers traveled.
- Access to a car without the cost of car ownership (you do not have to pay cost of maintaining, insurance, taxes...).

**Technical & Financial Implementation**

The company is a public-private partnership, belonging 50% to the Basque Government through its Energy Agency - EVE - and 50% to REPSOL.

The car sharing system will start operating first in Bilbao, in November 2011, with eight electric and six plug-in hybrid cars. The users will have 24 hour access to a fleet of cars in reserved parking spaces located in the three capitals of the Basque Country when the project implementation is finished.

**Aims and Objectives of this Sustainable Energy Action**

Car sharing is designed to replace car ownership for people who do not need to drive to work every day, and to significantly reduce congestion and greenhouse gas emissions.

A sudden modification of people's habits it is not expected, but rather a long-term change in behavior, increasing awareness among the citizens. Eg. this initiative can help many families to avoid buying a second car.

*This initiative will contribute to meeting the strategic targets of European and Spanish energy policy.*

**Electric Car being charged**

© Copyright IBILEK Car-sharing vehiculos electricos S.A

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**ENNEREG Good Practice in Sustainable Transport and Mobility Management**

**Contribution to respect the environment**

One shared car replaces from four to ten individually owned cars. Therefore, it would achieve the following:

- Lower occupation of the land
- Less local polluting emissions, improving air quality, less GHG emissions.
- Less noise in urban environments.
- Reduced traffic congestion. Less use of private cars.
- Promotion of other more sustainable means of transport.
- Less demand of parking spaces.
- Promotion of healthy lifestyles and neighborhoods

**Electric Converter**

Copyright: IBILEK Car-sharing vehiculos electricos S.A

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**Results and Impacts**

Some achievements resulting from this project have been estimated as indicated below:

- Energy savings: 155 MWh/year.
- Reduction of emissions: 40 t CO<sub>2</sub>/year.

Find out how much money you could save as a member of Ibiltek at: [www.ibilek.es/en/es-parati/ahorra-con-ibilek/](http://www.ibilek.es/en/es-parati/ahorra-con-ibilek/)

*E.g.: If you travelled 1000 km/year, you could save 6.681 €/year.*

**Success Factors / Barriers for Project Implementation**

**Success factors:**

- A good advertising campaign: Inform the greatest number of people of the advantages with respect to owning a car.
- Show that is a real alternative to car ownership: Car Sharing helps people leave the car-owning habit with the financial reward of saving money.

**Barriers:**

- The biggest determinant to vehicle use is vehicle ownership.
- The difficulties to incorporate a new technology.

Find out more about this and other Sustainable Energy Actions, online at: [www.regions2020.eu/gp](http://www.regions2020.eu/gp)

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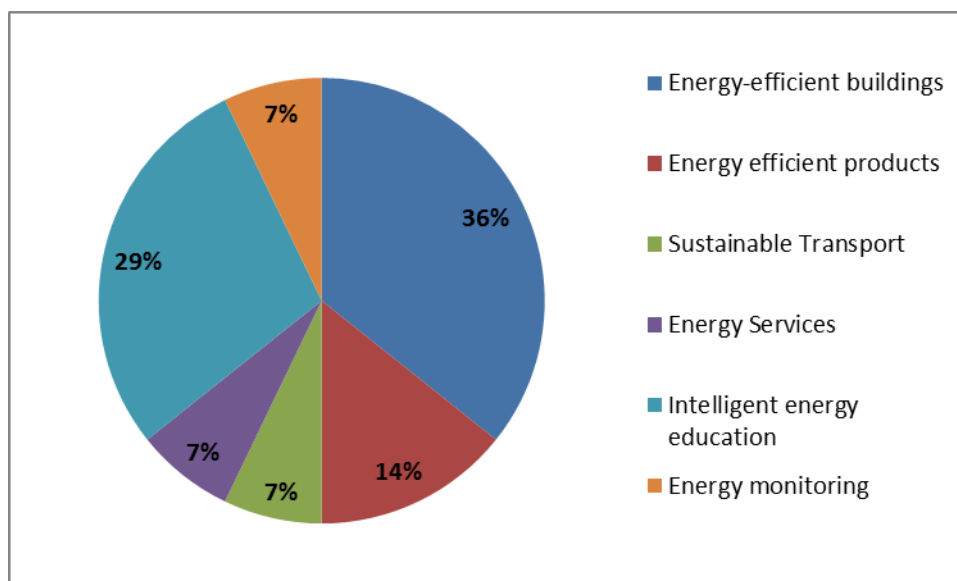
[www.eve.es](http://www.eve.es)  
[www.ibilek.es](http://www.ibilek.es)  
[www.ibilek.es](http://www.ibilek.es)

Source: ZREU 2011

The selection of adequate good practice projects is performed during SEP evaluation. In the 1<sup>st</sup> year of ENNEREG, 14 good practice projects have already been identified. All these projects will now all be summarized and published in this standardized format. The following figure illustrates the distributions of good practice projects over the six topics. , No good practice project was identified so far in the topics 'energy efficient industry' and 'renewable energy'.

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Figure 9: Distribution of identified good practice projects over ENNEREG topics



Source: ZREU 2011

Five good practice projects were identified for the topic 'energy-efficient buildings' (36 % of all good practice projects identified). Two of these projects concern the implementation of innovative energy-efficient solutions in public buildings (e.g. school buildings in Upper Palatinate). Two other good practices are targeted at the private residential sector. One of these is an innovative refurbishment solution for large slab residential buildings in the Polish Warmia and Masuria Voivodeship, the other project is an effective program targeted at the refurbishment in collective housing of the Region of Rhône-Alpes (i.e. the Mur-Mur-Campaign). The fifth good practice project is the Welsh Churches and Chapels Guide.

In the first ENNEREG year, two good practice projects were identified under the topic 'energy efficient products'. One good practice is an installation for desalination of sea water in Siros / Greece, which by combination with an automatic filling machine distributes drinking water without using plastic bottles. The establishment of an electric infrastructure' for electric cars in the Triangle region of Denmark is the other innovative product.

The first only good practice project in the topic 'sustainable transport' is the Basque company Ibilek. This company is implementing a new car sharing system using sustainable vehicles, providing access to electrical and plug-in hybrid vehicles with sizes and features suited to the different needs of mobility. The vehicles of Ibilek can be reserved by the hour or day via Internet and call centers.

The only good practice project so far identified in the topic 'energy services and financing' is the Danish based ESCO in Middelfart, Triangle Region. This project proved applicability of the ESCO concept in the Danish framework. The Middelfart model could be replicated to other municipalities and other tasks. In Middelfart, the model has been expanded to street lighting and private households.

Four good practice projects were selected in the topic 'IE education'. The Families Positive Energy © Project in the Region of Rhône-Alpes demonstrates how the organization of an intelligent competition between teams of a dozen homes from different villages or neighborhoods can set effective incentives for saving as much energy as possible in different home appliances. Another good practice is the organization of seminars for specific target groups on European Funding Schemes for a Sustainable Energy, which is organized in Upper Palatinate. The objective of these seminars is to inform regional and national for sustainable energy projects (SEPs) from European funding schemes. It offers introductory lectures on the complexity of EU Funding Schemes and on the preconditions for application and is followed by more in-depth presentations on specific funding schemes and their possibilities for project funding. The Energy Ambassador Campaign of the Silistra Region in Bulgaria is the third IE education good practice. The main objective of the action is to reduce energy consumption and costs for households by means of provision of advice on simple no and low cost measures (e.g. weather-stripping of windows, install flow regulators at kitchen, etc.). The final IE education good practice is the exhibition Wales Africa Links: Our Global Community in Wales, a twinning project between Wales and African countries, sensitizing for the impacts of climate change.

Finally, there is also one good practice project in the topic 'energy monitoring'. This good practice is the Regional Observatory for Energy and Greenhouse Gases emissions (OREGES) of the Rhône-Alpes region. This observatory was created by decision of the Energy Committee of the CRADT (regional conference for territory development and planning) on November 13th, 2002. The purpose is to provide to regional public, communities and stakeholders in the energy world a relevant tool of observation and information on GHG emission.

## 6 Cooperation of ENNEREG regions for SEP implementation

One basic task of the ENNEREG project is to encourage the implementation of SEPs by disseminating good practice case studies and lessons learnt from the Pioneer Sustainable Energy Regions. For the replication of sustainable energy good practices, the idea was developed within the consortium during the 1<sup>st</sup> project year to organize cooperation activities between the ENNEREG regions and other external actors, which should be used to replicate and push good practice implementation in other European regions. Although this task is not a direct element of the Grant Agreement and is having no concrete deliverable against it, it is discussed to organize

- Information events and workshops in the context of usual ENNEREG project meetings or other energy-relevant events, which can be used for the promotion and dissemination of experience related to the implementation of good practice projects,
- Compilation of reports on implementation of good practices in and between the ENNEREG regions, which can be developed as additional promotional material and input for the ENNEREG's Inspiration Guide.

The following table provides for an overview of cooperation activities, which are currently discussed between the consortium members to replicate the good practice experience to other European regions. The objective is to have at least one or two cooperation activities per topic.

Table 11: Topic-related Cooperation Activities in ENNEREG (draft)

|  | <b>Proposed Cooperation Activity, Location</b>  | <b>Interested Partners</b>          |
|--|---|-------------------------------------|
| <b>1-Energy-efficient buildings</b><br><b>Topic Leader: BAPE</b>                   | Compilation of a report of good practices of passive / nearly zero buildings  | Triangle Region, SSE, ZREU          |
|  | Compilation of a report on retrofitting of public buildings   |                                     |
|  | Report on approaches and tools for energy monitoring and action plan for public buildings   | EVE                                 |
|  | Report on managing energy in public tendering process   | RAEE                                |
|  | Report on refurbishment of historical buildings   | SWEA, ZREU                          |
|  | Report on assessment standard of buildings  |                                     |
|  |   |                                     |
| <b>2-Energy-efficient industry</b><br><b>Topic Leader: ZREU</b>                    | 1 information day on LED technology in Regensburg: Guided factory tour at OSRAM Opto Semiconductors, leading company of LED technology, guided tour illustrating LED lighting of historical UN heritage | CRES                                |
|  |   |                                     |
| <b>3-Energy-efficient products</b><br><b>Topic Leader: AREAM-IDMEC</b>             | 1 information day on LED technology: Guided factory tour at OSRAM Opto Semiconductors, leading company of LED technology, guided tour illustrating LED lighting of historical UN heritage               | ZREU, CRES                          |
|  |   |                                     |
| <b>4-Sustainable transport</b><br><b>Topic Leader: SEC</b>                         | Report on Bicycle Infrastructure Project in Kaunas Region (inter-modality, bicycle paths, etc)  | CRES, IDMEC-AREAM                   |
|  | Report on E-mobility and E-ticket project in Kaunas Region  | CRES, Triangle Region               |
|  | Report on IBILEK project (e-mobility) in Basque Country   |                                     |
|  |   |                                     |
| <b>5-Renewable energy</b><br><b>Topic Leader ESS</b>                               | 2-3 Day Study tour and training in the Region of Kronoberg on energy generation from solid biomass in the small and middle solare range   |                                     |
|  | Know-how exchange on biogas, incl. Combined district heating / power systems  | Triangle Region, South Denmark, ESS |
|  |   |                                     |
| <b>6-Energy services and SEP financing</b><br><b>Topic Leader: Triangle Region</b> | Report on good practices of energy service projects, need for definition of specified fields of good practices that need to be examined in more detail  | SDEO                                |
|  | Workshop / Site-visits of good-practice energy service projects   | SDEO                                |
|  |   |                                     |
| <b>7-IE Education</b><br><b>Topic Leader: SWEA</b>                                 | Report on teaching ECO driving  | IDMEC-AREAM                         |
|  | Report on communicating energy efficiency using "Entertainment"   | IDMEC-AREAM                         |
|  | Report on Reaching Unreceptive Audiences - Novel Approaches   |                                     |
|  |   |                                     |
| <b>8-Energy monitoring</b><br><b>Topic Leader: RAEE</b>                            | Report on methodologies for calculating energy consumption at communal level  | EVE                                 |
|  | Recommendation paper on data collection, also on the regional level   | CRES, EVE                           |
|  | Analyzing results of CLIMACT activities for ENNEREG   |                                     |
|  | Joint event ENNEREG-CLIMACT   |                                     |