



**BUILD2LC**  
Interreg Europe



European Union  
European Regional  
Development Fund

# GUIDE OF GOOD PRACTICES

SEVILLA, 30<sup>th</sup> JULY 2018

**BUILD2LC Project  
Boosting Low Carbon  
Innovative Building  
Rehabilitation in  
European Regions**

Download this good practices guide from the *BUILD2LC project website*.

Find many more interesting good practices from all over Europe at the *Interreg Policy Learning Platform*.

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# 1 INTRO- DUCTION TO THE BUILD2LC PROJECT AND THIS GOOD PRACTICES GUIDE

The recent framework strategy of the “Energy Union” of the European Commission indicates that 75% of European households are energy inefficient. There is also great potential for energy savings in public buildings of the EU. The BUILD2LC project (Boosting Low Carbon Innovative Building Rehabilitation in European Regions) will contribute decisively to achieve the EU energy goals, with its overall objective to increase the energy rehabilitation of buildings, and pave the path that facilitates the transit towards the new standard of nZEB buildings.

The key innovative aspect of BUILD2LC is its multidisciplinary approach, that counting on different complementary expertise at local (Gloucestershire County UK, and Gorenjska SI), regional (Andalusia ES, Rzeszow PL, North-West Croatia and Jämtland Härjedalen Region SE) and national (Lithuania) level, will allow achieving the energy goals and a sustainable development of the construction sector, based on improving the competitiveness, generating qualified employment, promoting innovation, and alleviating energy poverty, in line with the European objectives for smart, sustainable and inclusive growth.

The project with a high replicability impact, will design innovative financial instruments, adapted to the needs of citizens, new mechanisms that contribute to a more competitive business network, special programmes to support innovation, and innovative collaboration actions, focusing on vulnerable groups. Home-owners, business sector, policy makers, local authorities, knowledge institutes and vulnerable groups will benefit from the project.

The project will develop a complete learning process to facilitate an effective knowledge flow among regions, with a bottom-up approach methodology, counting on the regional stakeholder groups. **72 transferrable and exemplary good practices** and almost 70 events involving nearly 400 stakeholders, will establish 7 Regional Action Plans covering a population of more than 15 million inhabitants and improving energy efficiency over 25% at the participating regions.

The best practices database is the cornerstone of the project. For this reason one of the main outputs to be delivered for the first semester is a Guide of Good Practices, organized by regions and main topics that compiles and make available to the general public the best practices detected among the consortium and identified and characterized by every consortium partner. These practices are intended to be incorporated into the Policy Learning Platforms as “success stories”.

Along the BUILD2LC project, the fruitful interchange of ideas is hopefully to enlarge and perfect this Guide. Also, it is expected that, following the periodical consortium meetings as dedicated interregional seminars and other project meetings, the planned study visits will be held, where additional information on the good practices is being provided. This way, visiting consortium regions could make an initial approach on how to adapt these good practices, the ultimate aim of this project.

The BUILD2LC project aims to ensure the real impact of the achievements in the long term, that will be achieved through new and innovative initiatives put in place, which will be adapted to the local needs and expectations of society.

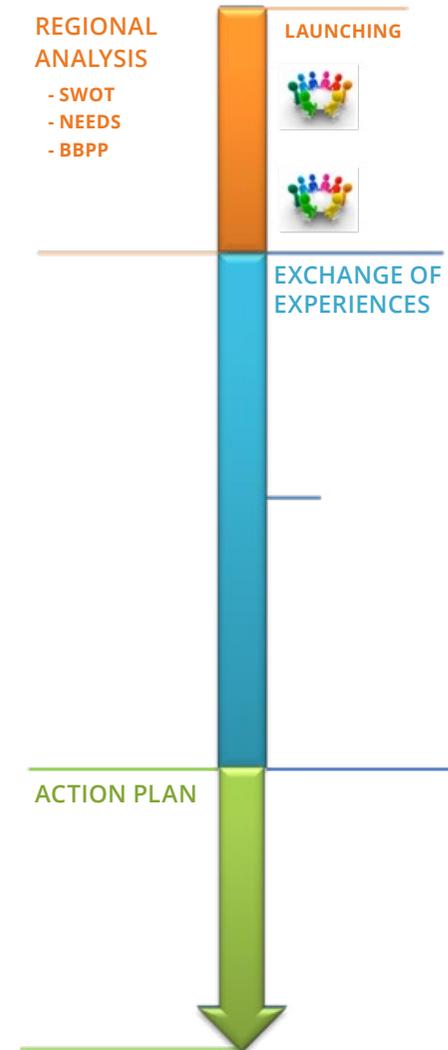
# 2 IDENTIFICATION OF GOOD PRACTICES. GUIDELINES AND METHODOLOGY

For a successful good practices compilation exercise, a methodological framework was provided as “guidelines” available for every consortium partner to help to identify good practices in *Low Carbon Innovative Energy Rehabilitation of Buildings Sector in Europe*, to be done at a regional level.

## — IDENTIFICATION OF GOOD PRACTICES: METHODOLOGY

According to the Interreg Europe Programme:

*Good practices* is defined as an initiative (e.g. project, process, technique) undertaken in one of the programme’s priority axes which has proved to be successful in a region and which is of potential interest to other regions. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective. Although the Interreg Europe programme primarily refers to good practices, valuable learning also derives from bad practices where lessons learnt can be taken into consideration in the exchange of experience process.



In line with the project's objectives, in the frame of **BUILD2LC** good practices shall be categorized into the following topics:

- **New Financial Instruments**
- **Professionalization of the Construction Sector,**
- **Activation of Demand and Combating Energy Poverty**
- **Innovation**

These guidelines will be used in the **BUILD2LC** project to assist the partners in selecting their good practices.

The methodology hereinafter proposed is oriented towards results being achieved. That is why these guidelines have been produced following the project deliverable structure, in order to ensure that all relevant aspects have been taken into account.

It is worth reminding that the present document focuses only on the regional assessment stage of the project's first semester (from April 2016 to September 2016) and expects to be enlarged together with the fruitful interchange of ideas among the consortium members.

The guidelines also provided the partners with a template that contains the description and specific required information defining good practices. This template is attached as an annex.

There is no limit on the number of good practices to be collected among the consortium members. As a requisite, a total minimum number of 70 shall be collected, an average of 10 for every region. For the BUILD2LC project purposes we will consider the above quoted definition for Good Practice as stated in the Interreg Europe Programme taking into account the **key criteria** suggested for the Good Practices selection:

- The action is finished or in progress, but in any case, with proven results.
- The action has a clear potential for replication in other territorial contexts.
- The action can be classified under one or more than one of the 4 topics defined in the Application Form (AF), namely:
  - New Financial Instruments
  - Professionalization of the Construction Sector,
  - Activation of Demand and Combating Energy Poverty
  - Innovation

- The action has already provided tangible and measurable results in achieving a specific objective. It is recommended (if possible) to be related to one or more of the self-defined performance indicators in the Project formulary. This is direct impact estimation.
  - **Policy 1** Number of households with improved energy labeling.
  - **Policy 2** Number of households with improved energy consumption classification.
  - **Policy 3** Number of households engaged in support programmes.
  - **Policy 4** (%) Reduction of annual primary energy consumption in public buildings.
  - **Policy 5** (kWh) Annual energy savings in households.
  - **Policy 6** Number of households with improved energy consumption classification.
  - **Policy 7** (%) Reduction of the use of fossil fuels in the building sector.

Any other features that may enhance the Good Practice potential will be welcome. In particular, impact on some success indicators might be collected, as:

- Total energy savings associated to the practice
- Reduction of CO<sub>2</sub> emissions
- Reduction of energy spending
- Surface (m<sup>2</sup>) or buildings affected
- Perceptions by users by survey (comfort quality of life...)
- Research and patents output
- Total investment outcomes
- Enhanced professional qualification
- Number of jobs created
- Etc.

During the good practices collection, it was recommended to the consortium partners that the selected good practices selected are meant to help other partners' to fully or partially cover their regional needs, previously identified at their respective regional analysis. Also, partners need to meet the output performance indicators stated in the Project formulary for each policy instrument as the project success depends partially on it. In consequence, special attention should be paid to the above when making the final selection of regional good practices.

### 3 GOOD PRACTICES REPOSITORY FOR TOPIC



#### Topic Report 1

We present the compilation of Good Practices for the topic ***New Financial Instrument***. A Good Practice can potentially match several topics at the same time. A number of **35 Good Practices** in the topic have been collected among all the partners.



#### Topic Report 2

We present the compilation of Good Practices for the topic ***Professionalization of the Construction Sector***. A Good Practice can potentially match several topics at the same time. A number of **26 Good Practices** in the topic has been collected among all the partners.



#### Topic Report 3

We present the compilation of Good Practices for the topic: ***New energy culture, citizen involvement and energy poverty***. A Good Practice can potentially match several topics at the same time. **42 Good Practices** in topic the have been collected among all the partners.



#### Topic Report 4

We present the compilation of Good Practices for the topic: ***Innovation***. A Good Practice can potentially match several topics at the same time. **24 Good Practices** in topic the have been collected among all the partners.

### GOOD PRACTICES REPOSITORY FOR REGION

ANDALUSIA REGION

## — GOOD PRACTICES FOR TOPIC



### TOPIC REPORT 1 GOOD PRACTICES IN THE TOPIC 'NEW FINANCIAL INSTRUMENTS'

#### ANDALUSIA REGION

1. **A5** Closed Catalogue of energy improvement measures for the Incentives Programme for Sustainable Construction in Andalusia.
2. **A8** Technological Corporation of Andalusia: regional RTDI funding Public-Private Partnership.

#### LITHUANIA

3. **L1** Carrot-and-Stick Game in Multi-Apartment Building Modernization.
4. **L3** Quality in Multi-Apartment Building Modernization.
5. **L4** Municipalities involvement in Multi-Apartment Building Modernization.
6. **L5** Standardization and Simplification in Multi-Apartment Building Modernization.
7. **L6** Standardization and Simplification in Public Buildings Modernization.
8. **L7** Complex projects.
9. **L8** Innovation in Financial Instruments.
10. **L9** Legal Framework Harmonisation.

#### GLOUCESTERSHIRE REGION

11. **G1** Warm & Well – Energy Efficiency Advice and Installation Scheme.
12. **G2** Energy Company Obligation (ECO).
13. **G5** Target 2050.
14. **G9** SustainCo (Sustainable Energy for Rural Communities).
15. **G11** Countdown to Low Carbon Homes.

#### PODKARPACKIE REGION

16. **P5** Rehabilitation of buildings and removal of asbestos.

#### CROATIA

17. **C1** Reconstructed public buildings in City of Zagreb under the ZagEE project.
18. **C2** Project Development Assistance instrument (PDA) – ZagEE project.
19. **C3** Finding and using innovative financial schemes for the reconstruction of municipal buildings – ZagEE project.
20. **C10** croenergy.eu.

#### JÄMTLAND HÄRJEDALEN REGION

21. **J1** The Climate Step.
22. **J2** Energy mapping grant.
23. **J4** Grant for municipal Energy and Climate Advisors.
24. **J5** Smart procurement.

#### SLOVENIA

25. **S1** CHP Planina – Kranj.
26. **S3** Contractual partnership in the building of Municipality of Kranj.
27. **S4** Eco Fund, Slovenian Environmental Public Fund.
28. **S5** ENSVET - Energy Advices for Citizens.
29. **S7** Complete renovation of apartment buildings - System Dominum.
30. **S8** Community of Preddvor – Kindergarten Storžek.

#### REST OF EUROPE

31. **O1** Deep renovation in Upper Austria.
32. **O2** Solar thermal installation- ESCO model.
33. **O3** Sustainable Campus- Green University.
34. **O5** Financing and delivery of energy saving measures.
35. **O6** Energy efficiency refurbishment in a multi-dwelling residential building in Sofia.

## — GOOD PRACTICES FOR TOPIC



### TOPIC REPORT 2 GOOD PRACTICES IN THE TOPIC 'PROFESSIONALIZATION OF THE CONSTRUCTION SECTOR'

#### ANDALUSIA REGION

1. **A1** Collaborating partner companies in the management of the Incentives Programme for Sustainable Construction in Andalusia.
2. **A3** A system of verification and monitoring of the Incentives Programme for Sustainable Construction in Andalusia.
3. **A4** Participative and open governance of the Sustainable Construction Programme in Andalusia.
4. **A9** Energy efficiency refurbishment in public social housing in Andalusia.

#### LITHUANIA

5. **L2** Technical Support and Promotion in Multi-Apartment Building Modernization (BETA Agency).
6. **L3** Quality in Multi-Apartment Building Modernization.
7. **L5** Standardization and Simplification in Multi-Apartment Building Modernization.
8. **L6** Standardization and Simplification in Public Buildings Modernization.
9. **L7** Complex projects.

#### GLOUCESTERSHIRE REGION

10. **G3** ACHIEVE – Actions in low income Households to Improve Energy efficiency through Visits and Energy diagnosis.
11. **G5** Target 2050.
12. **G6** European Sustainable Energy Award for Prisons (E-SEAP).
13. **G8** Link to Energy.
14. **G9** SustainCo (Sustainable Energy for Rural Communities).
15. **G10** Your Green Future (YGF).
16. **G12** Young Energy People.

#### PODKARPACKIE REGION

17. **P3** Podkarpackie Academy Certification.
18. **P4** Podkarpackie Low-Energy Consumption Technologies Transfer Centre's Passive House.

#### CROATIA

19. **C5** Inducing change in behavior through energy managers and end-users capacity building - ZagEE project.
20. **C9** Croskills: Lifelong training plan for building workers.
21. **C11** Bračak Energy Centre.

#### JÄMTLAND HÄRJEDALEN REGION

22. **J8** Energy Efficiency Support (EES).
23. **J9** Education close to zero energy constructions: "Energy lift".

#### SLOVENIA

24. **S6** Education "European Energy Manager - EUREM".

#### REST OF EUROPE

25. **O3** Sustainable Campus- Green University.
26. **O4** Casaclima training course for artisans and small enterprises.

## — GOOD PRACTICES FOR TOPIC



### TOPIC REPORT 3 GOOD PRACTICES IN THE TOPIC 'ACTIVATION OF DEMAND AND COMBATING ENERGY POVERTY'

#### ANDALUSIA

1. **A1** Collaborating partner companies in the management of the Incentives Programme for Sustainable Construction.
2. **A2** 100% online simplified procedure for the request and justification of grants from the Incentives Programme for Sustainable Construction.
3. **A3** A system of verification and monitoring of the Incentives Programme for Sustainable Construction in Andalusia.
4. **A4** Participative and open governance of the Sustainable Construction Programme.
5. **A5** Closed Catalog of energy improvement measures for the Incentives Programme for Sustainable Construction.
6. **A9** Energy efficiency refurbishment in public social housing in Andalusia.

#### LITHUANIA

7. **L1** Carrot-and-Stick Game in Multi-Apartment Building Modernization.
8. **L2** Technical Support and Promotion in Multi-Apartment Building Modernization.
9. **L3** Quality in Multi-Apartment Building Modernization.
10. **L4** Municipalities involvement in Multi-Apartment Building Modernization.
11. **L5** Standardization and Simplification in Multi-Apartment Building Modernization.
12. **L6** Standardization and Simplification in Public Buildings Modernization.

13. **L7** Complex projects.
14. **L8** Innovation in Financial Instruments.
15. **L9** Legal Framework Harmonisation.

#### GLOUCESTERSHIRE

16. **G1** Warm & Well – Energy Efficiency Advice and Installation Scheme.
17. **G2** Energy Company Obligation (ECO).
18. **G3** ACHIEVE – Actions in low income Households to Improve Energy efficiency through Visits and Energy diagnosis.
19. **G4** Cynefin.
20. **G5** Target 2050.
21. **G6** European Sustainable Energy Award for Prisons (E-SEAP).
22. **G7** Save@Work.
23. **G8** Link to Energy.
24. **G10** Your Green Future (YGF).
25. **G11** Countdown to Low Carbon Homes.
26. **G12** Young Energy People.

#### PODKARPACKIE

27. **P1** Expansion of energy infrastructure at the Higher School of Law and Public Administration using renewable sources of energy.
28. **P2** Comprehensive use of renewable energy sources in the Community Center Association "Emmaus-Rzeszów".
29. **P4** Podkarpackie Low-Energy Consumption Tech. Transfer Centre's Passive House.

30. **P5** Rehabilitation of buildings and removal of asbestos.
31. **P6** Revitalization of historic buildings in the old city Przemyśl.

#### CROATIA

32. **C8** Rural electrification project.
33. **C12** Through Knowledge to a Warm home.

#### JÄMTLAND HÄRJEDALEN

34. **J6** Energy wise housing cooperatives.
35. **J7** Zerooil – with bio oil – a region without fossil heating oil.

#### SLOVENIA

36. **S1** CHP Planina – Kranj.
37. **S2** Combating energy poverty.
38. **S4** Eco Fund, Slovenian Environmental Public Fund.
39. **S5** ENSVET - Energy Advices for Citizens.
40. **S7** Complete renovation of apartment buildings - System Dominum.
41. **S8** Community of Preddvor – Kindergarten Storžek.

#### REST OF EUROPE

42. **O6** Energy efficiency refurbishment in a multi-dwelling residential building in Sofia.

## — GOOD PRACTICES FOR TOPIC



### TOPIC REPORT 4 GOOD PRACTICES IN THE TOPIC 'INNOVATION'

#### ANDALUSIA

1. **A6** Manantia: A+ eco-business building with Andalusian patio concept.
2. **A7** Shallow Geothermal Heating and Cooling at the Parliament of Andalusia.
3. **A8** Technological Corporation of Andalusia: regional RTDI funding Public-Private Partnership.

#### LITHUANIA

4. **L8** Innovation in Financial Instruments.

#### GLOUCESTERSHIRE

5. **G4** Cynefin.
6. **G5** Target 2050.
7. **G8** Link to Energy.
8. **G9** SustainCo (Sustainable Energy for Rural Communities).
9. **G10** Your Green Future (YGF).
10. **G11** Countdown to Low Carbon Homes.

#### PODKARPACKIE

11. **P1** Expansion of energy infrastructure at the Higher School of Law and Public Administration using renewable sources of energy.
12. **P2** Comprehensive use of renewable energy sources in the Community Center Association "Emmaus-Rzeszów".
13. **P4** Podkarpackie Low-Energy Consumption Technologies Transfer Centre's Passive House.

#### CROATIA

14. **C1** Reconstructed public buildings in City of Zagreb under the ZagEE project.
15. **C4** Monitoring and verification of energy consumption and achieved savings through Energy Information System - ZagEE project.
16. **C6** Development of buildings stock register - ZagEE project.
17. **C7** System for monitoring, measuring and verification of energy savings (SMIV).
18. **C11** Bračak Energy Centre.

#### JÄMTLAND HÄRJEDALEN

19. **J3** Heating control with forecast.
20. **J7** Zerooil - with bio oil - a region without fossil heating oil.
21. **J8** Energy Efficiency Support (EES).
22. **J10** Sports Tech Research Centre.

#### SLOVENIA

23. **S6** Education "European Energy Manager - EUREM".
24. **S7** Complete renovation of apartment buildings - System Dominum.

#### REST OF EUROPE

25. **O2** Solar thermal installation - ESCO model.

## — GOOD PRACTICES REPOSITORY FOR REGION

### ANDALUSIA REGION

**A1** Collaborating partner companies in the management of the Incentives Programme for Sustainable Construction in Andalusia.

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## — GOOD PRACTICES FOR REGION

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**O6** Energy efficiency refurbishment in a multi-dwelling residential building in Sofia.



— GOOD PRACTICES FOR REGION  
**ANDALUSIA**



## REGION ANDALUSIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Collaborating partner companies in the management of the Incentives Programme for Sustainable Construction in Andalusia.

### PARTNER REGION

Andalusia

### LOCATION DATA

Andalusia

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

### DESCRIPTION OF THE PRACTICE

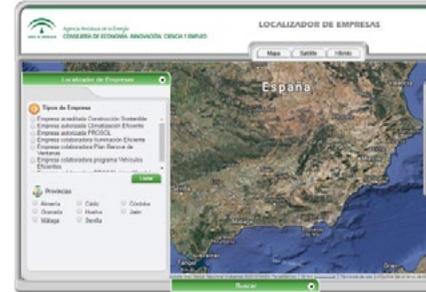
Public-private collaboration to facilitate the application to incentives by citizens and companies

*This GP is part of the **Sustainable Construction Programme in Andalusia – PICSA**. Managed by the Andalusian Energy Agency, financed under the ERDF and totally online, the aim of the programme was to facilitate the rehabilitation of existing buildings through energy saving and efficiency and renewable energy measures and to promote a culture based on the sustainable energy rehabilitation of buildings.*

The Incentives Programme for Sustainable Construction in Andalusia was fully developed with the collaboration of +8.300 private companies, “collaborating partner companies” liaising in integrative public-private collaboration with the Agency in the management and processing of incentives, which facilitated the administrative procedures to request incentives by end users. Most of the collaborating partner companies are SMEs, which contributes to generating economic activity in the weaker business environment. The Agency’s website included an interactive online mapping tool showing the geographical location of the collaborating companies, to ease the process to find a company freely.

- The Incentives Programme for Sustainable Construction in Andalusia fostered the collaboration between collaborating companies to enable the participation in big projects. Up to 22% of the collaborating companies stated that they usually make business with other collaborating companies belonging to the Programme.

- The resources needed were basically databases, computer applications and management tools. No need of extra funding.



### STRENGTHS

- The end user is free to choose any collaborating company.
- The collaborating companies helped extraordinarily to disseminate the Programme, multiplying the capillarity of the information.
- The application process and administrative complexity burden is totally covered by the collaborating company, avoiding a headache to the citizens and, therefore, making easier and more successful the final application of funds.

### WEAKNESSES

- It is necessary to inform and train the collaborating companies about the incentives scheme and the application process.
- End users, especially citizens and domestic users, lose perspective of the origin and aim of the grant funds and are not always informed about by the company.

### AREAS OF IMPROVEMENT AND LESSONS LEARNED

Improve the training of collaborating partner companies regarding the documentation requirements needed for justification purposes.

- Better training and information on the elements of the Programme management is needed, particularly those relating to justification tasks “ex post”.
- It is needed to reduce the payment periods to decrease the financial burden supported by the collaborating companies.

- High percentage lump sums on subsidies (some cases around 70% of the total investment sum) may introduce distortions on market mechanisms.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Data come from the general performance of the Incentives Programme for Sustainable Construction in Andalusia.

- Number of households engaged in support programmes: 60.000. Benefited groups included 60.000 citizens, 600 neighbourhood communities and 2.500 companies, many of them SMEs.
- (kWh) Annual energy savings in households: **422 million kWh/year** (26.000 toe) primary energy saved or diversified through low-carbon energy sources.
- (%) Reduction of the use of fossil fuels in the building sector. No data available at the moment.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Management model relied basically on the collaborating companies: up to 90% of developed actions.
- 86.000 ton/year CO<sub>2</sub> avoided.
- +36.000 energy improvement actions have been carried out.
- Total investment outcome: 258 million Euro.
- Total energy economic saving: 320 million Euro.
- Increased activity (+93%) and incidence in the creation and / or maintenance of

employment in the companies (+60%). **20.000 direct jobs** have been created and/or maintained.

- Better strategic competitive positioning towards the creation of value and improvement of business development (+74%).
- +8.300 collaborating partner companies, most of them SMEs. 1.600 for first time, fuelled by this incentives programme.
- 22% of the companies stated that they worked in collaboration with other participating companies in the Programme.
- 43% of the collaborating companies carry out other economic activities types of actions that are different to the total of 48 included in the Programme (not covered by the programme).
- **+7.000 households affected by, or in risk of suffering energy poverty** consequences, were targeted and benefited.

#### REGARDING THE COLLABORATING COMPANIES

- More than 70% indicate that the most positive elements of the Programme are its contribution to the development and/or maintenance of the companies of the sector, as well as the creation/maintenance of employment.
- 75% say that the Programme had an "excellent, very good or good" impact on their company.

#### REGARDING THE BENEFICIARIES

- Almost 85% say that the Programme has contributed to raising their awareness of the energy consumption of their households/buildings, and the need to adopt energy improvement measures.
- 97% have recommended or would recommend to other users the need to undertake improvement measures in their households and/or buildings and admit that the action implemented has affected in the degree of comfort or quality of life.
- 91% of beneficiaries value overall the Programme as very satisfactory.

#### EVIDENCE OF SUCCESS

Private companies are, likely the most benefited stakeholders of implementing energy efficiency investments. The collaborating companies helped extraordinarily to disseminate the Programme in their own interests, and were highly responsible of the fast depletion of the funds (only some days). Positive statements by the beneficiaries by surveys show that the public-partnership agreement works in the right way.

Also the vulnerable households suffering poverty fuel, as those supported by low income families were benefited from subsidies to tackle poor energy efficiency and, this way, increasing health conditions and thermal comfort.

The experience will be extended with the call for new collaborating partner companies to certify the impact and adequacy of the actions in the next Incentives Programme call.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The triangle of actors is formed by beneficiaries, collaborating companies and a donor entity, better if it is public or for non-profit organization. This organization, ideally an energy or development agency should exist in the receiving partner.

It is needed to inform the companies through informative meetings. Since the number of stakeholders might be high, competent clusters or private associations are needed as speakers of a lot of collaborating companies.

#### TIME REQUIRED TO COMPLETE THE BP

6 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

Joaquín Villar

##### E-MAIL

joaquin.villar@juntadeandalucia.es

##### ORGANIZATION

Andalusian Energy Agency

##### TYPE OF ORGANISATION

Regional public government energy agency

##### WEBSITE

[www.agenciaandaluzadelaenergia.es/know-the-agency](http://www.agenciaandaluzadelaenergia.es/know-the-agency)



## REGION ANDALUSIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

100% online simplified procedure for the request and justification of grants from the Incentives Programme for Sustainable Construction in Andalusia

### PARTNER REGION

Andalusia

### LOCATION DATA

Andalusia

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty

### DESCRIPTION OF THE PRACTICE

100% online tool to apply for energy rehabilitation of buildings incentives.

*This GP is part of the **Sustainable Construction Programme in Andalusia – PICSA**. Managed by the Andalusian Energy Agency, financed under the ERDF and totally online, the aim of the programme was to facilitate the rehabilitation of existing buildings through energy saving and efficiency and renewable energy measures and to promote a culture based on the sustainable energy rehabilitation of buildings.*

The Autonomous Community of Andalusia is an extensive territory of 87.597 Km<sup>2</sup> that includes 8 provinces and 770 municipalities, being the most populated region in Spain with more than 8.4 million people. The journey by car from the most distant village to the Agency headquarters can take up to 4h30'. To avoid inequalities when applying for an incentive, the Agency established a 100% online procedure for the request, and justification, for the Incentives Programme for Sustainable Construction in Andalusia.

Even those beneficiaries that cannot access the high-speed band internet were not discouraged to apply, given that the Programme was fully developed with the collaboration of +8.300 private companies, “collaborating partner companies” liaising in integrative public-private collaboration with the Agency in the management and processing of incentives, which **facilitated the administrative procedures to request incentives by end users**.

The needed material resources are, obviously, hardware and software tools.



### STRENGTHS

- The 100% online procedure erases inequalities regarding the beneficiaries' residence.
- There is a simpler single self-explanatory application procedure with a high degree of usability and self.
- It facilitates access to the incentives, lowering documentary obligations and paper usage.
- The application process and administrative complexity burden is often totally covered by the collaborating company, avoiding a headache to the citizens and, therefore, making easier and more successful the final application of funds.

### WEAKNESSES

- It is necessary to locate a nearby collaborating company when internet access is not available.
- Rural areas have normally low-speed internet access.
- Although there is a phone assistance service, untrained computer users as elderly people are potentially less successful to finish the application process.

#### AREAS OF IMPROVEMENT AND LESSONS LEARNED

Just minutes after the application period was open, the system was overwhelmed with dense internet traffic from multiple sources, making the tool unavailable especially for beneficiaries from far places and rural areas or densely populated areas. This incidence might have been fueled by the high lump-sum proportion of public incentives (up to 90% in some cases).

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Data come from the general performance of the Incentives Programme for Sustainable Construction in Andalusia.

- Number of households engaged in support programmes: 60.000. Benefited groups included 60.000 citizens, 600 neighbourhood communities and 2.500 companies, many of them SMEs.
- (kWh) Annual energy savings in households: **422 million kWh/year** (26.000 toe) primary energy saved or diversified through low-carbon energy sources.
- (%) Reduction of the use of fossil fuels in the building sector. No data available at the moment.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Management model relied basically on the collaborating companies: up to 90% of developed actions.
- 86.000 tons/year CO<sub>2</sub> avoided.
- +36.000 energy improvement actions have been carried out.
- Total investment outcome: 258 million Euro.

- Total energy economic saving: 320 million Euro.
- Increased activity (+93%) and incidence in the creation and / or maintenance of employment in the companies (+60%). **20.000 direct jobs** have been created and/or maintained.
- Better strategic competitive positioning towards the creation of value and improvement of business development (+74%).
- +8.300 collaborating partner companies, most of them SMEs. 1.600 for first time, fuelled by this incentives programme.
- 22% of the companies stated that they worked in collaboration with other participating companies in the Programme.
- 43% of the collaborating companies carry out other economic activities types of actions that are different to the total of 48 included in the Programme (not covered by the programme).
- **+7.000 households affected by, or in risk of suffering energy poverty** consequences, were targeted and benefited.

#### REGARDING THE COLLABORATING COMPANIES

- More than 70% indicate that the most positive elements of the Programme are its contribution to the development and/or maintenance of the companies of the sector, as well as the creation/maintenance of employment.
- 75% say that the Programme had an "excellent, very good or good" impact on their company.

#### REGARDING THE BENEFICIARIES

- Almost 85% say that the Programme has contributed to raising their awareness of the energy consumption of their households/buildings, and the need to adopt energy improvement measures.
- 97% have recommended or would recommend to other users the need to undertake improvement measures in their households and/or buildings and admit that the action implemented has affected in the degree of comfort or quality of life.
- 91% of beneficiaries value overall the Programme as very satisfactory.
- 43% of the collaborating companies carry out other economic activities types of actions that are different to the total of 48 included in the Programme (not covered by the programme).
- +7.000 households affected by, or in risk of suffering energy poverty consequences, were targeted and benefited.

#### EVIDENCE OF SUCCESS

The incentives were allocated in a few hours. The online system was able to support the multiple application requests for several hundred million Euro investments.

The collaborating companies stated that the online tool was easy to manage and worked normally (except for those users that found internet access concerns).

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The triangle of actors is formed by beneficiaries, collaborating companies and a donor entity, better if it is public or for non-profit organization. This organization, ideally an energy or development agency should exist in the receiving partner.

A correct server architecture, Operative System, and beta versions should be tested before.

#### TIME REQUIRED TO COMPLETE THE BP

6 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### TYPE OF ORGANISATION

Regional public government energy agency

##### WEBSITE

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REGION ANDALUSIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

A system of verification and monitoring of the Incentives Programme for Sustainable Construction in Andalusia

**PARTNER REGION**

Andalusia

**LOCATION DATA**

Andalusia

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

Evaluation of the Incentives Programme for Sustainable Construction in Andalusia. The evaluation results of the Incentives Programme for Sustainable Construction in Andalusia provided valuable information about positive elements and, as well, areas of improvement.

*This GP is part of the **Sustainable Construction Programme in Andalusia – PICSA**. Managed by the Andalusian Energy Agency, financed under the ERDF and totally online, the aim of the programme was to facilitate the rehabilitation of existing buildings through energy saving and efficiency and renewable energy measures and to promote a culture based on the sustainable energy rehabilitation of buildings.*

The Incentives Programme for Sustainable Construction in Andalusia was fully developed with the collaboration of +8.300 private companies, “collaborating partner companies” liaising in integrative public-private collaboration with the Agency in the management and processing of incentives, which **facilitated the administrative procedures to request incentives by end users**. The programme benefited 60.000 citizens, 600 neighbourhood communities and 2.500 companies, many of them SMEs.

The Andalusian Energy Agency set a protocol to evaluate the collaborating companies’ performance as well as the satisfaction of the beneficiaries with the purpose of getting the positive elements together with potential areas of improvement for the next programme call.

The Agency made an ex-ante evaluation of the Programme and compared these preliminary results with the opinion of both collaborating companies and beneficiaries.

The resources needed were surveys based on own online tools and telephone interviews.

**POSITIVE ELEMENTS**

Regarding the collaborating companies:

- More than 70% indicate that the most positive elements of the Programme are its contribution to the development and/or maintenance of the companies of the sector, as well as the creation/maintenance of employment.
- 75% say that the Programme had an “excellent, very good or good” impact on their company.

**REGARDING THE BENEFICIARIES**

- Almost 85% say that the Programme has contributed to raising their awareness of the energy consumption of their households/buildings, and the need to adopt energy improvement measures.
- 97% have recommended or would recommend to other users the need to undertake improvement measures in their households and/or buildings and admit that the action implemented has affected in the degree of comfort or quality of life.
- 91% of beneficiaries value overall the Programme as very satisfactory.

**AREAS OF IMPROVEMENT AND LESSONS LEARNED**

- Improve the training of collaborating partner companies regarding the documentation requirements needed for justification purposes.
- Better training and information on the elements of the Programme management is needed, particularly those relating to justification tasks “ex post”.
- Conduct a pre- and post- analysis of the energy impact of the action performed.
- Facilitate additional funding.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

Data come from the general performance of the Incentives Programme for Sustainable Construction in Andalusia.

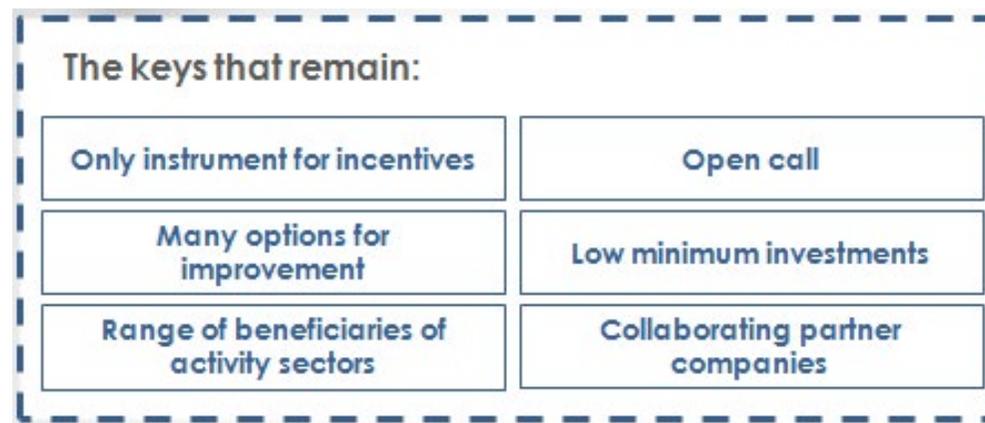
- Number of households engaged in support programmes: 60.000. Benefited groups included 60.000 citizens, 600 neighbourhood communities and 2.500 companies, many of them SMEs.
- (kWh) Annual energy savings in households: **422 million kWh/year** (26.000 toe) primary energy saved or diversified through low-carbon energy sources.
- (%) Reduction of the use of fossil fuels in the building sector. No data available at the moment.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Management model relied basically on the collaborating companies: up to 90% of developed actions.
- 86.000 tons/year CO<sub>2</sub> avoided.
- +36.000 energy improvement actions have been carried out.
- Total investment outcome: 258 million Euro.
- Total energy economic saving: 320 million Euro.
- Increased activity (+93%) and incidence in the creation and / or maintenance of employment in the companies (+60%). **20.000 direct jobs** have been created and/or maintained.
- Better strategic competitive positioning towards the creation of value and improvement of business development (+74%).
- +8.300 collaborating partner companies, most of them SMEs. 1.600 for first time, fuelled by this incentives programme.
- 22% of the companies stated that they worked in collaboration with other participating companies in the Programme.
- 43% of the collaborating companies carry out other economic activities types of actions that are different to the total of 48 included in the Programme (not covered by the programme).
- **+7.000 households affected by, or in risk of suffering energy poverty** consequences, were targeted and benefited.

#### EVIDENCE OF SUCCESS

The data collected helped to give shape to next Programme calls, both on the factors that stay and the implementation of improvement areas:



#### MORE SIMPLIFICATION

- A single procedure, simpler.
- Facilitates access to incentives, fewer documentary obligations.
- New classification of actions, clearer and more complete.

#### BETTER ENERGY CULTURE

- New technical conditions of energy saving and satisfying needs.
- Possibility of opting for more sustainable, energetic and environmental solutions.

#### MORE GUARANTEES

- Clear delimiting of conditions, and audits, projects as eligible costs.
- New collaborating partner companies that certify the impact and adequacy of the actions.

Also it was detected the need to establish *new categories* as proposals for energy improvement, e.g. smart solutions for energy management, energy management in the digital home, towards nearly zero energy buildings, e-vehicles of public interest, etc.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The triangle of actors is formed by beneficiaries, collaborating companies and a donor entity, better if it is public or for non-profit organization. This organization, ideally an energy or development agency should exist in the receiving partner.

Getting replies to a survey is always hard. We suggest “carrot measures” as to link the achievement of the final approbation of the grant to answer correctly the questionnaire.

#### TIME REQUIRED TO COMPLETE THE BP

One month

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##### ORGANIZATION

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REGION ANDALUSIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Participative and open governance of the Sustainable Construction Programme in Andalusia**

**PARTNER REGION**

Andalusia

**LOCATION DATA**

Andalusia

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

The Sustainable Construction Programme in Andalusia (PICSA) seeks through energy saving and renewable energy to promote the energy refurbishment of buildings, rehabilitate urban areas, improve the competitiveness of companies of the construction sector, create skilled employment and reduce energy poverty.

The Programme consists of three main actions:

- An incentive scheme funded with €116 million and 48 eligible actions to facilitate the energy refurbishment of existing buildings, mobilizing €258 million of total investment outcome.
- Implementation of a financing line, specifically through revolving funds for companies.
- Creation of the “**Sustainable Construction Round Table**” involving more than 70 experts from different disciplines.

**The Sustainable Construction Round Table - establishing an expert network.**

The Sustainable Construction Round Table brings together more than 70 experts (stakeholders) from different disciplines: private companies and professionals gathered in clusters and professional associations, economic and social agents, technological institutions, universities and civil organisations (mainly consumer and environmental). They work together and pool their knowledge about key industry issues including its competitiveness, supply and demand, renewable energy, innovation, employment and legislation. This way the public authorities, headed by the Andalusian Energy Agency as Secretary entity, open the elaboration process to the public even before getting public the Plan itself to be submitted to public scrutiny with the objective to elaborate a Development Plan for the Sustainable Construction and Rehabilitation of Andalusia, Horizon 2020, for the creation and consolidation of a new model in the construction sector based on these themes.

The work has been coordinated by the Andalusian Energy Agency, which had also a participatory virtual platform where interested parties could submit their contributions. This is a forum for expert discussion, based on the need to split construction from speculation, and take sustainability as a catalyst for economic recovery and job creation. It is necessary to highlight that a high consensus was reached among all participants.

The stakeholders were not only important, but essential to set the Programme on a transparent and participatory basis. From the very beginning of the Programme design process, they were invited to participate trying to maximize

the benefits of an **open governance process**. This was the way to enable and involve any interested relevant stakeholder to add to the creation of the Plan. To maximize resources, the original round table were split into six different groups according to the six categories in the Programme: competitiveness, demand and investments activation, urban and buildings rehabilitation, innovation and technological development, legislation development against speculation and employment.

The tasks followed the following schedule:

- **February 2014:** Beginning of the preparatory tasks for the implementation of the Programme.
- **March 2014:** the Andalusian Regional Government publishes the Decree-law 1/2014, which regulates the Programme for the Promotion of Sustainable Construction in Andalusia.
- **April 2014:** first call for incentive schemes launched.
- **July 2014:** Sustainable Construction Round Table constituted.
- **September 2014:** first call for incentive schemes closes.
- **January 2015:** the Development Plan of Sustainable Construction is approved, elaborated in the framework of the Sustainable Construction Round Table, with a **very high consensus** of all the participating experts.
- **February 2015:** the Plan gets public and submitted to public scrutiny.



- **February 2015:** second call for incentives launched with new funds (€74 million) as well as the financing line based on revolving funds.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Data come from the general performance of the Incentives Programme for Sustainable Construction in Andalusia.

- Number of households engaged in support programmes: 60.000. Benefited groups included 60.000 citizens, 600 neighbourhood communities and 2.500 companies, many of them SMEs.
- (kWh) Annual energy savings in households: **422 million kWh/year** (26.000 toe) primary energy saved or diversified through low-carbon energy sources.
- (%) Reduction of the use of fossil fuels in the building sector. No data available at the moment.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Since the Sustainable Construction Programme, in Andalusia (PICSA) count on a 2020 horizon the success is yet to come.

The creation of the Sustainable Construction Roundtable involving more than 70 experts from different disciplines as a part of the Sustainable Construction Programme in Andalusia, was given reconnaissance with the **REGIOSTARS 2015 award** in the Category 2: Sustainable Growth. Link to the news:

[http://ec.europa.eu/regional\\_policy/en/newsroom/news/2015/10/regiostars-awards-2015-honours-europe-s-most-innovative-regional-projects](http://ec.europa.eu/regional_policy/en/newsroom/news/2015/10/regiostars-awards-2015-honours-europe-s-most-innovative-regional-projects).

#### EVIDENCE OF SUCCESS

The evidence of success comes from the fact that the Plan was approved with a massive support and full consensus from all the involved stakeholders.

The public authorities get benefited from this open participatory process and assure the plan has solid bases in accordance to the citizens and stakeholders opinions. The plan has been written in a democratically opened way, empowering the stakeholders and getting benefits of an open decision-making process.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Please indicate problems or barriers that could appear when transferring the good practice to other partner.

#### TIME REQUIRED TO COMPLETE THE BP

1 year

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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REGION ANDALUSIA



GOOD PRACTICE FICHE

TITLE OF THE GOOD PRACTICE

Closed Catalog of energy improvement measures for the Incentives Programme for Sustainable Construction in Andalusia

PARTNER REGION

Andalusia

LOCATION DATA

Andalusia

TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- New financial instruments

DESCRIPTION OF THE PRACTICE

A closed catalogue of 48 available energy improvement measures involving a wide range of thematic as renewable energies, energy saving and efficiency, smart mobility, etc., to choose from the Programme for Sustainable Construction in Andalusia.

*This GP is part of the **Sustainable Construction Programme in Andalusia – PICSA**. Managed by the Andalusian Energy Agency, financed under the ERDF and totally online, the aim of the programme was to facilitate the rehabilitation of existing buildings through energy saving and efficiency and renewable energy measures and to promote a culture based on the sustainable energy rehabilitation of buildings.*

To ease the investment decision of beneficiaries and collaborating companies, a closed catalogue of measures to receive the incentives is displayed once the user accesses the online tool.

The user friendly catalogue is segmented into different categories and also guides and helps the beneficiary to navigate through the incentives call application. The upper menu gives access to the different tabs that orientate the user:

- Energy improvement measures guide.
- What should I know?
  - Recommendations.
  - Step by step.
  - Key concerns.
  - Collaborating companies list.
  - Funds aim.

The resources needed are obvious hardware and software tools. The implementation process is easy.

STRENGTHS

- The catalog facilitates access to the incentives call, lowering documentary obligations and paper usage and animating the beneficiary to finish the application process.
- The application process and administrative complexity burden is much lower.

WEAKNESSES

- Some improvement measures shall not be covered. The action number 48 should solve this eventuality.



48 possible actions



#### AREAS OF IMPROVEMENT AND LESSONS LEARNED

- The catalog needs to be updated due to the technological progress.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Data come from the general performance of the Incentives Programme for Sustainable Construction in Andalusia.

- Number of households engaged in support programmes: 60.000. Benefited groups included 60.000 citizens, 600 neighbourhood communities and 2.500 companies, many of them SMEs.
- (kWh) Annual energy savings in households: **422 million kWh/year** (26.000 toe) primary energy saved or diversified through low-carbon energy sources.
- (%) Reduction of the use of fossil fuels in the building sector. No data available at the moment.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Management model relied basically on the collaborating companies: up to 90% of developed actions.
- 86.000 tons/year CO<sub>2</sub> avoided.
- +36.000 energy improvement actions have been carried out.
- Total investment outcome: 258 million Euro.
- Total energy economic saving: 320 million Euro.
- Increased activity (+93%) and incidence in the creation and / or maintenance of

employment in the companies (+60%). **20.000 direct jobs** have been created and/or maintained.

- Better strategic competitive positioning towards the creation of value and improvement of business development (+74%).
- +8.300 collaborating partner companies, most of them SMEs. 1.600 for first time, fuelled by this incentives programme.
- 22% of the companies stated that they worked in collaboration with other participating companies in the Programme.
- 43% of the collaborating companies carry out other economic activities types of actions that are different to the total of 48 included in the Programme (not covered by the programme).

#### REGARDING THE COLLABORATING COMPANIES

- More than 70% indicate that the most positive elements of the Programme are its contribution to the development and/or maintenance of the companies of the sector, as well as the creation/maintenance of employment.
- 75% say that the Programme had an “excellent, very good or good” impact on their company.

#### REGARDING THE BENEFICIARIES

- Almost 85% say that the Programme has contributed to raising their awareness of the energy consumption of their households/buildings, and the need to adopt energy improvement measures.

- 97% have recommended or would recommend to other users the need to undertake improvement measures in their households and/or buildings and admit that the action implemented has affected in the degree of comfort or quality of life.
- 91% of beneficiaries value overall the Programme as very satisfactory.
- 43% of the collaborating companies carry out other economic activities types of actions that are different to the total of 48 included in the Programme (not covered by the programme).
- +7.000 households affected by, or in risk of suffering energy poverty consequences, were targeted and benefited.

#### EVIDENCE OF SUCCESS

The incentives were allocated in a brief time. The collaborating companies stated that the online tool was friendly, easy to manage and worked normally.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The triangle of actors is formed by beneficiaries, collaborating companies and a donor entity, better if it is public or for non-profit organization. This organization, ideally an energy or development agency should exist in the receiving partner.

A correct server architecture, OS, and beta versions should be tested before.

#### TIME REQUIRED TO COMPLETE THE BP

3 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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REGION ANDALUSIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Manantia: A+ eco-business building with Andalusian patio concept**

**PARTNER REGION:**

Andalusia

**LOCATION DATA**

Granada, Andalusia

**TOPIC OF THE PRACTICE**

- Innovation

**DESCRIPTION OF THE PRACTICE**

**Manantia Ecobusiness Centre** is a “A+” energy performance office building in Granada, Andalusia, Spain. The design strategy was conceived to meet three fundamental requirements:

1. Comfortable workplace.
2. Program flexibility.
3. Respect for the environment.

The basic design was based on the typically **Andalusian central patio, inspired in the Arabic architecture of Alhambra palace**, as a source vertex. This is a contemporary approach of the Andalusian traditional terraced patio house. Among other strategies, the patio is the climatic “heart” of the house and acts as a climate regulator element, useful both in winter for heating and summer for cooling purposes. The patio ensures natural lighting to all areas of the building as well.

Granada has a typical continental-mediterranean climate, with hot and dry summers and cold winters. As a medium dry place, temperature differences along the day can reach up to 20°C.

Other strategies implemented to ensure maximum energy efficiency and use of resources are:

- Design according to LID (Low Impact Development), appropriate guidelines for the optimal use of solar energy, wind studies and acoustic-sound techniques.
- Water resources: reuse of water and gray water treatment, efficient gardening equipment. Consequent reduction in water consumption.

- Energy and pollution: reducing the emission of greenhouse gases, optimization of energy efficiency, use of renewable energy, heating and cooling active and passive systems, green roof and tempering indoor temperature by usage of water bodies.
- Resources and materials: use of certified materials low environmental impact.
- Indoor environmental quality: efficient optimization of ventilation systems, control of pollution, thermal comfort enhancement, natural light maximization and high performance artificial lighting regulation.
- Integrated building control system.



**MAIN FEATURES**

- More than 1.500 m<sup>2</sup> living surface and a 1.000 m<sup>2</sup> green roof.
- The central patio has four water sources as thermo-regulators, inspired in the nazarí-arabic Alhambra palace fountains.
- The green roof, which is in fact an urban orchard, reduces the cooling needs in summer by 15% thanks to a low transmittance factor, U=0,33 W/m<sup>2</sup>K. Plants are typically Mediterranean with low water demand.
- Raw materials come from local sources when possible. For example, the façade material was extracted in a nearby marble quarry (Sierra Elvira), patio timber has a green sustainable source certification and some wall materials were reused and recycled from other construction works.
- Sun blockers to create shade, mainly to avoid direct sunlight to the windows in summer while letting the sunshine in winter.
- Grey water (waste waters from basins) treated onsite to satisfy the own building gardening requirements.
- Underfloor heating and cooling based on high-performance very low enthalpy geothermal energy (geothermal heat pump – ground source heat pump) dwelling 127m depth – 12°C constant temperature along the year.
- Ventilated facade to optimize heat intake with different performance depending on the season.

- Free cooling when possible based on high ventilation usage.
- Solar water heating.
- Efficient and healthy lighting.
- SCADA integrated building control system.

Most of these features can be directly implemented in existing buildings.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 1
- Annual energy savings in households: 450.000 kWh
- Reduction of the use of fossil fuels in the building sector: 78%

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The Manantia Ecobusiness Centre performance has been tested during 2013-2015 showing a perfect matching with the previously estimated performance. The building consumes around 12.000 kWh on a monthly basis compared to the 55.000 kWh of the reference ordinary building (+450.000 kWh saved every year). This way, the granted A+ performance has been confirmed.

The consumption profile shows that more than half of the energy demand comes just from simple ventilation and transport of air much more than heating and cooling needs, which would be quite abnormal in ordinary buildings, where heating and cooling are the main power consumers.

- The total building cost sums up to 780.840 € (517,11 €/m<sup>2</sup>) compared to an ordinary reference building that costs 411.257 € (272,35 €/m<sup>2</sup>), +90% extra cost.
- Pay-back period is estimated in 7-8 years compared to the reference ordinary building.
- IRR > 10% (Internal Return Rate) after year 15.
- The project was jointly conducted by *Otero Construcciones* company (Manantia is its company's headquarters and acts as their lighthouse onsite project) and Ayllón Engineers. The project enhanced the professional qualification of both companies and helped to enlarge the catalogue of successful sustainable projects.

**Total affected surface: 2.890,92 m<sup>2</sup>**

#### EVIDENCE OF SUCCESS

Manantia reduces the energy consumption from 219,55 to 47,90 kWh/m<sup>2</sup>, -78,2% compared to a benchmark building and a very similar reduction in CO<sub>2</sub> emissions.

According to the Spanish National Energy Efficiency Action Plan 2011-2020, the tertiary sector (offices, commerce, services, excluding domestic uses) demands 45% of electric power supply in Spain, taking administrative and office buildings half of the demanded electric energy<sup>1</sup>. Any serious strategy to reduce the power demand to gain energy efficiency at national level should focus on the main consumers: offices and administrative buildings.

Thermal comfort in Manantia is much better than in ordinary buildings and increase productivity at work and quality of working life. This reduces health problems and ergonomic problems for workers and costs regarding work sick leaves for the companies.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Buildings sustainable design depends completely on the local weather profile. Therefore, it shall be done taking carefully into account the local climate.
- We do not recommend transferring completely this model except in similar climates (from Mediterranean to Continental climate). On the other hand, some features are fully transferable as an example of innovation regardless of the type of building or the local climate.
- Initial larger investment could hamper the transfer. Though equipment related to sustainable building requirements is getting cheaper, A+ buildings demand higher investment costs that need to be financed. Fortunately, private banks seem to be lately more sensitive to finance "green projects".
- Some renewable sources are not available depending on the region. We recommend considering other equivalent solutions to gain similar results. For example, if solar radiation is low, using biomass for heating water.

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##### WEBSITE

www.agenciaandaluzadelaenergia.es/know-the-agency

www.construccionesotero.com/en/2011/08/22/manantia-eco-business-centre-in-cortijo-del-conde-business-park-in-granada/

#### FICHE COMPLETED ON DATE

9 August 2017

1. <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/national-energy-efficiency-action-plans>



**REGION ANDALUSIA**



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Shallow Geothermal Heating and Cooling at the Parliament of Andalusia**

**PARTNER REGION**

Andalusia

**LOCATION DATA**

Andalusia

**TOPIC OF THE PRACTICE:**

- Innovation

**INTRODUCTION**

The Andalusian Parliament is the legislature of the Spanish Autonomous Community of Andalusia. The seat of the Andalusian Parliament is located in Seville, the capital city of Andalusia. Its building is the former historic Hospital of the Cinco Llagas (Five Wounds Hospital). Built as soon as in 1546, and used as a hospital until 1972, this large building was retrofitted to be the seat of the Andalusian Parliament from 1992.

Sevilla has a Mediterranean-oceanic climate with short mild and wet winters and long, hot and dry summers, being probably the hottest spot in Europe. Cooling needs are essential but heating is very necessary also.

**DESCRIPTION OF THE PRACTICE**

Heating and cooling needs of the Parliament are assisted with a geothermal shallow energy installation (very low enthalpy geothermal energy) by exchanging heat with underground shallow waters. This practice is an example of the availability of incorporating high technology to historic and heritage buildings. It is a safe and eco-friendly method of extracting heat from underground water (or bedrock) in order to heat or cool buildings.

The water reservoir lies 10-20 meters above the ground at a very constant temperature of 18-22°C along the year. This temperature stability is critical for a high performance. This way, the water reservoir acts as a “seasonal heat reservoir”, giving back away in winter the heat injected in summer. Standard air-based heat pumps, on the contrary, operate poorly during heat waves that raise temperatures above 40° every summer.

Exchange of heating is based on water-water transference with the underground body waters, much more efficient than the normal air-air model from standard heat pumps, and no water consumption (close circuit). Heat is extracted from underground waters in winter (18°C underground water temperature, +5°C typically outdoors) and re-injected in summer (22°C underground water temperature, +40°C typically outdoors). The reservoir intake is separated 150m from the re-injection zone to assure a very constant temperature and, therefore, avoid the thermal depletion by assuring a regenerative cycle.

Most of these features can be directly implemented in existing European historic buildings.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labelling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 1
- Annual energy savings in households:
- Reduction of the use of fossil fuels in the building sector:

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- This solution assures high comfort and energy savings compared to standard HVAC alternatives.
- The geothermal facility saves energy both in winter and summer due to the energy demand reduction, but also because in medium seasons (spring and autumn) there is simultaneous production of both heating and cooling. The thermal devices can produce 7°C and 45°C water at the same time at the same machine, avoiding the use of chillers and boilers.
- Optimal zone mapping thanks to the decentralised fan-coils network that reduces pump power needs.
- External extreme temperatures do not affect the coefficient of performance of the heat pumps because the water reservoir keeps a stable temperature.
- Sensible water savings compared to standard air-air HVAC alternatives that need evaporative cooling in a typically dry Mediterranean zone.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- Availability of an underground water reservoir. Nevertheless, a bed rock model could work in its absence.
- Initial larger investment could hamper the transfer. Though equipment related to sustainable building requirements is getting cheaper, it demands higher investment costs that need to be financed. Fortunately, private banks seem to be lately more sensitive to finance “green projects”.
- Heritage restrictions on historical buildings.
- Environmental regulation on drilling works and underground water bodies.

**TIME REQUIRED TO COMPLETE THE BP**

1 year

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**ORGANIZATION**  
Andalusian Energy Agency

**TYPE OF ORGANISATION**  
Regional public government energy agency

**WEBSITE**  
[www.agenciaandaluzadelaenergia.es/know-the-agency](http://www.agenciaandaluzadelaenergia.es/know-the-agency)

**FICHE COMPLETED ON DATE**

9 August 2017



REGION ANDALUSIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Technological Corporation of Andalusia: regional RTDI funding Public-Private Partnership

**PARTNER REGION**

Andalusia

**LOCATION DATA**

Andalusia

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments
- Innovation

**DESCRIPTION OF THE PRACTICE**

The Technological Corporation of Andalusia -CTA- is a Public-Private Partnership (PPP) established in 2005 by the Andalusian Regional Government, as an instrument to:

- Create a joint collaborative platform to integrate Research Institutes, University Researchers, Innovative Companies, Banks, Saving Banks, Institutions, and Regional Government.
- Identify knowledge and technology capabilities and requirements from companies and research groups.
- Promote and fund R&D and Innovation projects which results in commercial products and services.

CTA's goals are to facilitate the transformation of Andalusia towards an economic region with greater added value and contribute to picture Andalusia as a competitive region in strategic R&D and Innovation areas facilitating the attraction of economic wealth and technological resources. the transfer of knowledge and technology between Public Research Groups/Centres and Companies, in order to generate economic and/or social benefits is, this way, essential.

**RTDI FINANCING**

CTA finances R&D business projects which are economically or socially viable in sectors of strategic importance for Andalusia. Projects must subcontract at least 15% of their budgets to public.

Projects are financed using their own funds and also help to seek additional funding from Regional, National and European funding sources.

**THE INNOVATION CLUSTER**

CTA is a strategic partner for innovation. It helps businesses, universities, public authorities and other bodies to successfully achieve their R&D objectives and valorise the results. CTA supports an innovation cluster comprising 158 member companies regardless of their size or area of business and help them to successfully plan an overall strategy for innovation: from their R&D requirements and the formulation of projects to the search for business partners and the funding required to achieve their aims.

**ADVANCED INNOVATION SERVICES**

Apart from managing innovation funding opportunities for their members, CTA is specialist in technology transfer and the evaluation of R&D.

- CTA helps businesses, universities, technology centres, public authorities and other bodies to achieve the maximum results from their R&D initiatives and transform the results into wealth creation and concrete business activities. Preferential terms for member companies.
- The services provided include: strategic R&D advice; evaluation of innovative initiatives; support for the internationalisation of R&D; consultancy in processes involving Procurement of Innovation by Public Bodies; support for technology scouting and studies and reports concerning ad hoc innovation.

**STRATEGIC ACTIVITY SECTORS**

- Aerospace and Productive Processes
- Agrifood
- Biotechnology
- **Building and Civil Engineering**
- **Energy and Environment**
- Information and Communication Technologies
- Leisure and tourism industry

## CONSTRUCTION SECTOR

Given its importance for the Andalusian economy, construction and civil engineering is a traditional area of industry which could benefit considerably by adopting innovation to increase competitiveness. Sustainability is one of the key challenges facing a sector in which the principal areas of innovation include the use of intelligent technology in buildings and inhabited spaces (smart infrastructures; Building Information Modelling – BIM, etc.), as well as the optimisation of the consumption of resources throughout a building's entire life cycle (materials, energy) and the minimising of environmental impact.

Examples of projects supported by the Corporation include the application of artificial intelligence to reduce the number of accidents in the sector, façades covered with highly efficient energy glass and the recycling of waste material to use as road asphalt.

## INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Funded projects: 625
- 22% projects carried out in collaboration
- University Public Research Groups involved: 341
- Total funds granted: 157 M€
- Total projects budget: 474 M€
- Sectors:
  - Aerospace and Productive Processes: 126
  - Agrifood: 66
  - **Building and civil Engineering: 38**
  - **Energy and Environment: 155**
  - Leisure and Tourism: 26
  - ICT: 140

## EVIDENCE OF SUCCESS

- CTA pioneered their unique model for the transfer and development of regional innovation and their methods have attracted interest from governing bodies and institutions from other Spanish regions as well as from abroad.

## FACTORS THAT MIGHT HAMPER THE TRANSFER

- CTA was a huge effort pioneered by the Regional Government. It is strongly advisable to establish a strong alliance among public sector, private sector, innovation actors and universities before.
- The region needs some critical mass. We recommend to replicate a supra-regional / national if the region is not very populated.

## TIME REQUIRED TO COMPLETE THE BP

2 years

## CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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### ORGANIZATION

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### TYPE OF ORGANISATION

Regional public government energy agency

### WEBSITE

[www.agenciaandaluzadelaenergia.es/know-the-agency](http://www.agenciaandaluzadelaenergia.es/know-the-agency)

## FICHE COMPLETED ON DATE

7 September 2017





Target homes at Córdoba



Target homes at Jaén



Target homes at Málaga



Together with the technical renovation works themselves, AVRA conducted some other complementary initiatives to round the programme, as:

- Internal management of projects design, rehabilitation works and health and safety coordination, for what concerned personnel needed to be trained for the corresponding tasks.
- Diagnosis (before), surveillance (during) and check (after) of energy efficiency-related renovation works (blower door, thermographies, etc.) with the support of some university research teams.
- Measures to increase employability of concerned independent professionals and workers formerly unemployed.
- Dissemination and raising awareness activities among the neighbourhood.

A major challenge was performing the needed works while the tenants lived daily in the buildings

#### MAIN STAKEHOLDERS INVOLVED AND BENEFICIARIES TARGET GROUPS

There were three main involved target groups: tenants (families), the professionals and companies working for every stage of the programme, and the promoter itself –AVRA.

The families are rewarded after a tiring works period due to the increased comfort at home, lesser energy consumption needs and improved durability and maintenance conditions of the buildings.

The professionals (building-related workers, university researchers, independent professionals and construction companies) apart from the economic activity itself, have access to innovative techniques on building rehabilitation and renovation. AVRA's personnel get and researchers got trained on-site on real works. Concerning formerly unemployed independent professionals and workers, had access to measures fostered by AVRA to increase their employability and training on energy rehabilitation. Companies, on the other hand, got a useful experience to increase their competitiveness regarding energy rehabilitation.

AVRA, finally, gets benefitted for an increased quality and conditions of their social residential buildings through innovative measures. Also, AVRA is benefitted for a better qualification and education of the workers and the internalised processes through this experience.

#### FINANCIAL RESOURCES REQUIRED FOR ITS IMPLEMENTATION

Most of the works were granted with the Sustainable Construction Programme (co-financed by FEDER) managed by the Andalusian Energy Agency (AEA), and also co-financed with own funds.

#### STRENGTHS

- The involved professionals had access to innovative techniques on building rehabilitation and renovation while companies got useful experience to increase their competitiveness regarding energy rehabilitation, what fostered the reinforce of a energy rehabilitation market.
- The exemplary work by the public administration served as a spark to ignite the rehabilitation private market

#### WEAKNESSES

- Excessive subsidies dependency for rented homes. The landlord that rent a home has no way to obtain profits from this kind of investments since the benefitted persons are the tenants.

#### AREAS OF IMPROVEMENT AND LESSONS LEARNED

We learnt how to implement the needed measures in a more efficient way and optimizing resources. Also, we got experience on technical issues as isolation.

Moreover, raising awareness among tenants was very important to avoid discomfort.

Monitorization tasks in collaboration with the University of Seville has been very rewarding since it delivered a lot of useful data that helped AVRA how to optimize future renovation works.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- **Number of households with improved energy labelling:** 6.794 until 2015. 2016-2017: 488. 2017-2018 (exp.) 889.
- **Number of households with improved energy consumption classification.** 6.794 until 2015. 2016-2017: 488. 2017-2018 (exp.) 889.
- **Number of households engaged in support programmes.** 6.794 until 2015. 2016-2017: 488. 2017-2018 (exp.) 889.
- **(%) Reduction of annual primary energy consumption in public buildings:** N/A. It has been estimated a reduction in final energy consumption of 16-22% just avoiding the major leakage problems. A
- (kWh) Annual energy savings in households: N/A.
- (%) Reduction of the use of fossil fuels in the building sector: N/A. Estimation of 3.100 ton CO<sub>2</sub>/year reduction

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- During 2014-2015, 140 homes were monitorised.
- Thermal comfort total time: 90% (under pilot project monitorisation in Cádiz).
- Thermal discomfort time reduces by 72% (under pilot project monitorisation in Granada).

#### EVIDENCE OF SUCCESS

These works are putting all these families out of a former energy poverty situation. In addition, raising awareness and dissemination measures among the neighbourhood acts not only as an education tool but also a social glue and empowers directly their beneficiaries in the transformation of the buildings and urban landscape.

Monitorisation of the buildings and explanations of the registered data let the beneficiaries interpret the change and enabled a change of habits regarding energy consumption and raising awareness on the importance of energy saving, directly billed on economic saving and CO<sub>2</sub> emissions reduction.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- A lack of funding since the financial return of these kind of measures is very low.
- Raising awareness among the neighbourhood and dissemination activities.
- Low qualification of professionals that disable the correct execution of the planned measures.
- Some programme requirements impose the installation of active equipment (heat and cold generation) to get a very high energy performance. Some of this equipment could not be maintained, managed or used by the final beneficiaries.

#### TIME REQUIRED TO COMPLETE THE BP

See dates above

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

AGENCIA DE VIVIENDA Y REHABILITACIÓN DE ANDALUCIA (Andalusian Agency for Homes and Rehabilitation) - AVRA

##### TYPE OF ORGANISATION

Regional public agency, government Andalusia

##### WEBSITE

[www.juntadeandalucia.es/avra](http://www.juntadeandalucia.es/avra)

#### FICHE COMPLETED ON DATE

19/09/2017

— GOOD PRACTICES FOR REGION  
**LITHUANIA**



REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Carrot-and-Stick Game in Multi-Apartment Building Modernization**

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

Lithuania decided to implement a carrot-and-stick policy to foster the renovation of multi-apartment buildings.

**Carrot part**

Initial Multi-Apartment Building Renovation (MABR) process was slow and insignificant without state support, due to following reasons:

- long deep renovation payback period.
- unwillingness of owners to change status quo.
- commercial banks reluctance to provide financing.

Lithuanian State decided then to provide support to foster building modernization process by:

- providing interest rate subsidies (result based).
- providing additional grants to final beneficiaries (result based).
- covering monthly installments for low income households.
- providing technical support financing.
- providing long term financing.

**Lessons learned**

- sensitivity analysis assessment is needed.
- support should be higher in the beginning to encourage faster process.
- step down plan on support is needed ones project pipeline is amplifying.
- best case scenario - support funding sources are related to receivables from results e.g. carbon emission trading receivables.
- support conditions should be embedded in the law and programs (stakeholders has to be certain about the support).

**Stick part**

Initial MABR process was slow because:

- large share of owners on fixed (low) income.
- many low income people were eligible for heating bill compensations, and had no incentive to join the program.
- chronic distrust of population in Government.

Lithuanian state decided then to discipline those who were not willing to join building modernization process by:

- refusing to heating bill compensations to those who voted against their building modernization;
- requiring to gradually accumulate funds for building renovation.

**Lessons learned**

- only "carrot" related stimulations are not working.
- "stick related" requirements usually could follow by "carrot" related support.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Estimated number of households with improved energy labelling: 37.000
- **Estimated number of households with improved energy consumption classification: 37.000**
- Estimated number of households engaged in support programmes: 120.000
- Estimated annual energy savings in all households (kWh): 272 million

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- estimated total energy savings (kWh) – ~500.000 kWh up to the date.
- reduction of (ton CO<sub>2</sub> equivalent) emissions – ~116.000.
- buildings affected:
  - buildings renovated (as of 9 September 2016) – 848
  - estimated surface (m<sup>2</sup>) affected - ~ 1.5 million
  - buildings under renovation – 649
  - Investment projects evaluated (waiting list) – 1411.
- circa €400 million investment materialized in multi-apartment buildings in Lithuania (ESI, commercial banks, state budget);

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### EVIDENCE OF SUCCESS

Introduced measures resulted in major increase in project pipeline. The GP helped to shape **financial instruments** in a way so they become attractive to final beneficiaries.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Please indicate problems or barriers that could appear when transferring the good practice to other partner.

Major challenges:

- limited possibility to distribute “carrots”, especially when project pipeline is starting to build up.
- dissatisfaction with “stick” approach among final beneficiaries.
- moving away to far from usual market practice could result in problems to attract private investors.

#### TIME REQUIRED TO COMPLETE THE BP

It took about 1 year to set-up state support elements to the legislation, and other 2 years to make some amendments

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

Public Investment Development Agency

##### TYPE OF ORGANISATION

Joint stock venture (publicly owned)

##### WEBSITE

www.vipa.lt



## REGION LITHUANIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Technical Support and Promotion in Multi-Apartment Building Modernization (BETA Agency)

### PARTNER REGION

Lithuania

### LOCATION DATA

Lithuania

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

### DESCRIPTION OF THE PRACTICE

- At the introduction of the multi-apartment modernization program, just few building applied for the modernization loans. MABR was struggling, because:
  - public relations program failed (final beneficiaries were not aware of the program);
  - multi apartment owners were poorly organized;
  - financial intermediaries did not wanted to take on an extra administrative work (e.g. technical evaluation, reporting, creating new accounting systems and etc.);
- As a response to these issues state established agency (BETA) responsible for:
  - providing support with project/program preparation and implementation;
  - MABR program coordination and assistance to municipalities administrators;
  - evaluation of the project documentation;
  - supervision of project implementation;
  - monitoring;
  - administration of the State subsidy provided to the project implementers;
  - organizing capacity building programs, trainings and public information activities.

### DESCRIPTION OF THE TECHNICAL ASSISTANCE INSTITUTION – BETA

Public Company Housing Advisory Agency was established on 2001. After the reorganization the public company it was renamed Housing Energy Efficiency Agency (BETA), which established on February 19, 2013. BETA provides consulting services and assistance for homeowners on matters related to the renovation (modernization) of multi-apartment buildings. It also evaluates and approves submitted investment plans and procurement documents, cooperates with municipal authorities, engineering consultancy companies, educational institutions, non-governmental organizations, etc. BETA also implements the project which purpose is to encourage the owners of the apartments and other premises in multi-apartment buildings to participate in the Multi-apartment Building Renovation (Modernization) Programme.

Moreover, BETA participates in EU-funded international projects, which in turn strengthens cooperation with housing partners from other countries, and enhances skills and experience in developing projects related to the application of alternative energy resources in multi-apartment buildings, and in generating ideas for the construction of passive houses. It also performs activities related to encouraging homeowners to renovate multi-apartment buildings.

In the near future the Agency is planning to coordinate the Programme for Energy Efficiency Improvements in Public Municipality Buildings.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

#### Performance indicators:

- Estimated number of households with improved energy labelling - >37 thousand;
- Estimated number of households with improved energy consumption classification - >37 thousand;
- Estimated number of households engaged in support programmes - ~120 thousand;
- Estimated annual energy savings in all households (kWh) - ~272 million

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- investment projects for the renovation evaluated – 3659;
- around 400 million EUR investments materialized in multi apartment buildings in Lithuania (ESI, commercial banks, state budget);
- Promotional activities implemented ~400;
- increase in awareness among individuals increased from 58,6 % (in 2014) to 92,9 % (in 2015)

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### EVIDENCE OF SUCCESS

Introduced measures resulted in major increase in project pipeline. The GP helped to shape FI's in a way so they become attractive to final beneficiaries.

Technical support measures helped to increase quality of applications, technical documentation and quality of construction works.

**Factors that might hamper the transfer:**  
Please indicate problems or barriers that could appear when transferring the good practice to other partner.

Major challenges:

- to find resources to be allocated for the technical support (including funds to be allocated to local technical support agency);
- increase in number of employees working on the renovation (although this can be tackled by delegating some activities to existing entity)

#### TIME REQUIRED TO COMPLETE THE BP

1-2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**ORGANIZATION**

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**TYPE OF ORGANISATION**

Joint stock venture (publicly owned)

**WEBSITE**

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REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Quality in Multi-Apartment Building Modernization**

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

Quality of works regarding buildings modernization is one of the main issues to be tackled, because investments for the modernization are relatively high. Bad examples are usually more visible, save less energy, create important concerns among the citizens and are escalated in the media.

While promoting financial instruments, extremely huge attention was contributed to ensure the quality of construction works, so the following measures were implemented:

- technical projects are checked and approved by municipalities specialists.
- construction companies are required to provide insurance, that they can perform works in accordance to the contract.
- construction companies are pre-checked before public procurement process (companies are checked for their capacity, excluded companies in black list).
- construction works are supervised by independent and certified specialists.
- effective complaint system is developed in order to timely react to any resident complaint.
- BETA (technical support agency) performs on-site visits to check all requirements are met.
- state territorial planning and construction inspectorate (local construction supervisory authority) has to visit each construction site at least 2 times-
- good examples of implemented projects are promoted in the media.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Estimated number of households with improved energy labelling: 37.000
- **Estimated number of households with improved energy consumption classification: 37.000**
- Estimated number of households engaged in support programmes: 120.000
- Estimated annual energy savings in all households (kWh): 272 million

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- increase in value of renovated buildings 15-20%.
- all renovated buildings reached at least 40% savings and energy efficiency labelling C

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

**EVIDENCE OF SUCCESS**

Introduced measures resulted in major increase in project pipeline. The GP helped to shape **financial instruments** in a way so they become attractive to final beneficiaries.

Supervision measures helped to increase quality of construction works and satisfaction among final beneficiaries.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- partners may need to adjust various legislation acts to implement provided measures.
- measures may vary depending on the region weather conditions.

**TIME REQUIRED TO COMPLETE THE BP**

2-3 years. Although when measures are known, it can take much faster

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

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**ORGANIZATION**

Public Investment Development Agency

**TYPE OF ORGANISATION**

Joint stock venture (publicly owned)

**WEBSITE**

www.vipa.lt



REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Municipalities involvement in Multi-Apartment Building Modernization**

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

In order to foster the modernization process Lithuanian government decided to stipulate and simplify MABR process at the level of the final beneficiaries by involving municipalities. At the beginning process of modernization was:

- administratively intensive;
- challenging because required to conciliate many owners;
- home owners were averse (did not want to borrow) and poorly organized.

So the National Government set this plan:

- municipalities instructed to draw lists of the worst energy performing buildings.
- municipalities appointed renovation administrators, which:
  - can borrow on behalf and in favor of apartment owners.
  - are providing all the process administration service.
  - keep loans on off the balance sheets.
  - expenses are covered by the budget funds.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Estimated number of households with improved energy labeling: 37.000
- **Estimated number of households with improved energy consumption classification: 37.000**
- Estimated number of households engaged in support programmes: 120.000
- Estimated annual energy savings in all households (kWh): 272 million

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- estimated total energy savings (kWh) – ~500.000 kWh up to the date.
- reduction of (ton CO<sub>2</sub> equivalent) emissions – ~116.000.
- buildings affected:
  - buildings renovated (as of 9 September 2016) – 848
  - estimated surface (m<sup>2</sup>) affected - ~ 1.5 million
  - buildings under renovation – 649
  - Investment projects evaluated (waiting list) – 1.411
  - circa €400 million investment materialized in multi-apartment buildings in Lithuania (ESI, commercial banks, state budget);

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

**EVIDENCE OF SUCCESS**

Technical assistance measures helped to decrease administration workload to final beneficiaries resulting in increase in project pipeline.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- some changes may touch upon property related laws, which may be challenging to change.
- enforcement measures must be created allowing modernization activities in the property of owners, who voted against and not willing to cooperate.

**TIME REQUIRED TO COMPLETE THE BP**

2-3 years. We believe, that it should take much shorter to introduce applied measures in other partners countries

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Public Investment Development Agency

**TYPE OF ORGANISATION**

Joint stock venture (publicly owned)

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## REGION LITHUANIA



# GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

**Standardization and Simplification in Multi-Apartment Building Modernization**

### PARTNER REGION

Lithuania

### LOCATION DATA

Lithuania

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- New financial instruments

### DESCRIPTION OF THE PRACTICE

When planning the MABR modernization programme, one of the immediate challenges was to standardize and simplify the documents and whole processes to enable a smooth and understandable implementation of financial instruments.

The Lithuanian government decided to simplify the process for final beneficiaries by imposing some legal changes:

- 50% +1 of apartment owners (absolute majority) needed to agree to join the program.
- joint liability for the building modernization investments.

Other financial institutions introduced process simplification measures:

- Central public procurement organization introduced simplified and shorter procedures for building modernization procurement.
- BETA Agency [see GP titled “Technical Support and Promotion in Multi-Apartment Building Modernization (BETA Agency)”] created simplified application forms and reduced administration extent to minimum necessary.
- Special standardized templates prepared for public procurement, including standardized construction agreement.
- Improved and standardized documents for energy efficiency certification were prepared.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Estimated number of households with improved energy labeling: 37.000
- **Estimated number of households with improved energy consumption classification: 37.000**
- Estimated number of households engaged in support programmes: 120.000
- Estimated annual energy savings in all households (kWh): 272.000

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- estimated total energy savings (kWh) – ~500.000 kWh up to the date.
- reduction of (ton CO<sub>2</sub> equivalent) emissions – ~116.000.
- buildings affected:
  - buildings renovated (as of 9 September 2016) – 848
  - estimated surface (m<sup>2</sup>) affected - ~ 1.5 million
  - buildings under renovation – 649
  - Investment projects evaluated (waiting list) – 1.411
  - circa €400 million investment materialized in multi-apartment buildings in Lithuania (ESI, commercial banks, state budget);

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

### EVIDENCE OF SUCCESS

Introduced measures helped to decrease administration workload, legal uncertainty and trust in the program (financial intermediaries and investors now trust in the program and are willing to participate with own funds).

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- detailed local legislation analysis needed;
- high competencies of experts involved in standardization and simplification required;
- some measures may require to have more complex legal framework changes;
- market requirements must be considered and market should players consulted (responses should be treated cautiously)

### TIME REQUIRED TO COMPLETE THE BP

2-3 years. We believe, that it should take much shorter to introduce applied measures in other partners countries

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Public Investment Development Agency

#### TYPE OF ORGANISATION

Joint stock venture (publicly owned)

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REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Standardization and Simplification in Public Buildings Modernization**

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

Lithuania has done much in recent years to reduce its energy intensity. However a market segment with considerable energy efficiency potential is the building sector. This includes public sector buildings such as schools, town halls, hospitals (and street lighting). Underinvestment and inefficient operations in these assets waste energy resources and create a significant burden on the public budgets and inadequate comfortable levels for its users, including civil servants, students, patients and normal citizens in poorly lit streets.

Estimated potential energy savings range from 25% with few investments to as much as 60% provided there is a high standard of design and investments. It is well understood that many energy saving investments can be repaid through the savings on future energy bills, which means the net effect on the budget can be neutral, and once the investments have been repaid, strongly positive. Commercial arrangements to achieve this can be designed using energy performance contracting (EnPC). In EnPC energy efficiency works (capex) and services are paid mostly from resulting energy cost savings (i.e. budget neutral and not counted as public debt), while ESCOs may sell the resulting receivables (forfeiting) in order to refinance themselves.

However these approaches have not yet been well developed in Lithuania. There are a number of existing barriers that explain this:

1. Lack of internal funding of beneficiaries and lack of adequate long term financing product for external financing through ESCOs
  - a. Public and private building owners lack own funds for financing energy efficiency investments.
  - b. Lack of an appropriate long term financing product for externally financing the energy efficiency investments through ESCOs.
2. Regulatory uncertainties
  - a. The contractual and regulatory framework in Lithuania could need to be still further clarified and simplified.
  - b. A business model is only starting to be established.
3. Lack of resources amongst stakeholders
  - a. Lack of expertise and resources among the building owners for preparing ESCO tenders, evaluating bids and monitoring performance.

VIPA Agency signed an ELENA (technical assistance facility managed by EBRD) agreement to create project pipeline and to involve a certain number of stakeholders (Lithuanian ESCOs, public authorities and building owners participating in actual EnPC activities) big enough that they can then build on this experience and replicate the ESCO concept further. Transparent and secure framework conditions and sufficient demand of ESCO projects would allow a national ESCO industry to develop.

Because of the legal restrictions in Lithuania, most central government buildings users are not able to borrow capital on their behalf. In order to address this issue it was decided to apply the ESCO model and start to develop ESCO market in Lithuania. It was soon realized that it was needed standardized documentation for the Public buildings program:

- standard ESCO procurement documentation.
- standard ESCO agreement.

The ESCO procurement is considered public-private partnership (PPP) type procurement in Lithuania. PPP project cycle was, accordingly, standardized, simplified and made shorter.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Other indicators of success:

- 39 applications received to finance through ESCO.
- 13 ESCO type financing application approved.

#### EVIDENCE OF SUCCESS

High interest and involvement of possible ESCO's and public building owners are shaping project pipeline. Simplified process will help to reduce administration burden.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Major challenges:

- detailed local legislation analysis needed.
- some measures may require to have more complex legal framework changes.
- high competencies of experts involved in standardization and simplification is required.
- market requirements must be considered and market should players consulted (responses should be treated in unbiased way).

#### TIME REQUIRED TO COMPLETE THE BP

1 year

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**TYPE OF ORGANISATION**

Joint stock venture (publicly owned)

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REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Complex projects

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

During multi-apartment building modernization project implementation, new tendencies emerged:

- broader planning required due to behavior changes (e.g. some blocks required less energy, therefore smaller diameter heating pipes and smaller heat producing plants needed).
- building owners willing to improve their neighborhood.

**DETAILED BACKGROUND**

The Lithuanian Government has made the energy-efficient refurbishment of existing real estate one of their top priorities. In the new financial period of 2014-2020, the plans include renovations on entire city blocks at once, moving towards a more holistic practice of the integrating renovation of the entire block, rather than simple one-off projects. It means that not only would a single apartment building be affected, but that care would be given to the entire infrastructure in the immediate area, including street lighting, parking-lots, green spaces, playgrounds etc.

At the end of 2014, the Ministry of Environment of the Republic of Lithuania and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety signed a co-operation agreement, supporting Lithuania in developing and implementing the first pilot project of the block renovation initiative in three Lithuanian cities. In the first phase of the integrated block renovation implementation plan for three Lithuanian pilot cities was envisaged.

Lithuania has been successfully engaged in modernizing multi-dwelling apartment buildings since 2013, after a new renovation model was introduced. But the overarching goal is to regenerate entire city blocks, rather than single buildings. Modernizing the existing infrastructure as a whole makes the city areas more attractive places to live overall. Therefore, within this pilot project, a complex renovation of the selected quarters in three different cities of Lithuania will be both a learning experience and an adaptable example for other Lithuanian municipalities. Close partnership between the Ministry of the Environment of the Republic of Lithuania and the Association of Local Authorities in Lithuania, throughout all stages of implementation of the pilot project, in later stages will help spread the good practice of block renovation across other Lithuanian municipalities. The aim is to encourage municipalities to include the renovation of residential and public buildings, as well as the regeneration of the surrounding environment and supporting infrastructure, a central facet of their on-going territorial development and improvements programs.

Lithuania is looking for opportunities to achieve maximum cost-efficiency when it comes to investing in integrated regeneration projects for its cities, benefiting from the experience of other country's similar renovation projects (such as German experience).

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Estimated number of households with improved energy labeling: 37.000
- **Estimated number of households with improved energy consumption classification: 37.000**
- Estimated number of households engaged in support programmes: 120.000
- Estimated annual energy savings in all households (kWh): 272.000

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- new building block renovation program prepared and launched;
- 3 pilot project applications for block renovation received and financing plans prepared.

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### EVIDENCE OF SUCCESS

The multi-apartment building renovation process fostered interest in complex buildings blocks (quarter) renovation program which envisage complex renovation of city areas. New programme is developed and 3 pilot projects are launched. Currently, potential financing sources to fund such programme are under analysis.

High interest of municipalities is expressed with possible project pipeline development is envisaged.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- coordination of the different financing sources for the complex renovation is challenging.
- Need to find financing sources for non-profit generating investments (e.g. recreational and green areas).

#### TIME REQUIRED TO COMPLETE THE BP

1 year

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##### TYPE OF ORGANISATION

Joint stock venture (publicly owned)

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REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Innovation in Financial Instruments**

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Innovation
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

Usual financing sources like commercial banks, are risk averse and conservative in Lithuania. Financing periods proposed by banks are too short for the investments in the non-commercial infrastructure (including deep renovation of buildings). Therefore there is a need for non standard financial instruments.

The VIPA Agency replied developing a non-standard guaranty product, based on a securitization model, to attract capital to the multi-apartment buildings renovation programmes from international capital market which is:

1. fast.
2. the percentage guaranteed is increasing over time.
3. it does not affect NPL's indicators up to guaranty amount.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Estimated number of households with improved energy labeling: 37.000
- **Estimated number of households with improved energy consumption classification: 37.000**
- Estimated number of households engaged in support programmes: 120.000
- Estimated annual energy savings in all households (kWh): 272.000

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- 1 innovative financial instrument was developed.
- 1 innovative public funds leveraging technique is under development.
  - 1 investor expressed wiliness to be anchor investor.
  - support for this project from Ministry of Finance, central bank of Lithuania and other key players received.
  - 80% of the modeling prepared.

**EVIDENCE OF SUCCESS**

Standard financial instruments do not meet expectations of final beneficiaries, financial intermediaries or investors. The development of innovative financial instruments resulted in high interest among all stakeholders, which is envisaged to develop in new project pipeline.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- market players are not familiar with new FI features (challenging promotion).
- the need of highly qualified employees to develop innovative instruments.
- some innovations generate high initial costs, (although relatively low compared to the attracted amounts).

**TIME REQUIRED TO COMPLETE THE BP**

6-24 month depending on novelty level

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Joint stock venture (publicly owned)

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REGION LITHUANIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Legal Framework Harmonisation

**PARTNER REGION**

Lithuania

**LOCATION DATA**

Lithuania

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

A major challenge regarding funding energy initiatives is to have possibility to implement financial instruments harmonizing legislation with EU regulations. Lithuanian government has addressed this question since establishment of the first financial instrument in 2007 by:

- assessing and harmonizing legislation that conflicts with financial instruments established using public funds.
- developing special legislation or programs (with continuous adjustment) for new financial products which can be trusted by all stakeholders. Following special legislation for buildings renovation in Lithuania are developed:
  - multi-apartment building renovation programme (MABR).
  - special law governing MABR process.
  - Public building renovation programme.
- Stakeholders involved: ministries, funds and financial instruments managers, financial intermediaries, final beneficiaries.
- Implementation of this practice did not required substantial amounts of financial resources, but it was crucial to mobilize political support and competences to proceed with change in legislation.
- The major weakness of this practice is that there is no universal solution how to implement it.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of financial instruments established in various sectors, including energy efficiency in buildings.
- Currently, VIPA Agency is involved in the legislation changing process which we believe will have the positive effects on attractiveness of financial instruments and enlarge the possibility to attract private investors.

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- 4 financial instruments for building renovation established.
- 1 financial instruments for the building renovation is under development.

**EVIDENCE OF SUCCESS**

We believe that legislation assessment is very important both for:

- enabling and setting-up financial instruments.
- creating any financial instrument using public funds.

This good practice and the involvement of the government helped to shape financial instruments in a way so they become attractive both for final beneficiaries and financial intermediaries. The change in legislation resulted in a major increase in project pipeline as well as in participation of financial intermediaries with own funds.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

This GP is hard to transfer directly to other countries because of differences in legal systems. However, main principles, implementation process and motivational impact of measures could be replicated.

The best solution is to gather a team of **top experts** in different fields for improvement of the legislation: sector related, state aid public accounting, legal consultants (lawyers), state debt and fiscal, etc.

Another barrier is the limitations set by legislation at the EU level. This obstacle can be dealt with by communicating to EU officials.

When transferring this practice it is very important to have **top level political support** for the legislation changing process to foster energy efficiency.

**TIME REQUIRED TO COMPLETE THE BP**

Depending on the type of legislation and political support level decisions can take from 2 weeks up to 1 year.

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— GOOD PRACTICES FOR REGION

# GLOUCES TERSHIRE REGION



REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Warm & Well – Energy Efficiency Advice and Installation Scheme

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

Gloucestershire, UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments
- Activation of demand and combating energy poverty

### DESCRIPTION OF THE PRACTICE

Warm & Well is delivered by Severn Wye on behalf of a consortium of seven local authorities covering the counties of Gloucestershire and South Gloucestershire. The consortium is currently chaired by Stroud District Council. The other local authority members are Cheltenham Borough Council, Cotswold District Council, Forest of Dean District Council, Gloucester City Council, South Gloucestershire Council and Tewkesbury Borough Council.

Warm & Well was launched in October 2001 to install energy efficiency improvements in the homes of domestic householders. In 2012 the Warm and Well scheme opened the Warm and Well advice line, allowing clients in Gloucestershire and South Gloucestershire to access free energy efficiency advice and information on grants and funding available both nationally and locally. This advice line had been running in parallel to Warm & Well previously but then became integrated in order to ensure provision of a holistic programme.

The Warm & Well scheme aims to improve energy efficiency in the home and reduce the risk of fuel poverty and associated health problems by:

- Raising public awareness.
- Providing specific and appropriate advice to all householders.
- Making referrals into grant and discount schemes.
- Addressing central links between energy efficiency, affordable warmth, cold living conditions and health risks, such as cardiovascular illness and condensation damp related respiratory illness.

The target groups for the project are:

- Households vulnerable to health problems associated with, or exacerbated by, low indoor temperatures.
- Households likely to be living in fuel poverty, and unable to afford adequate heating.
- The general public, to promote awareness of energy efficiency and the related issues of ventilation and the avoidance of condensation damp.

Grants are available through the Warm and Well scheme and over the years have covered a variety of measures from solid wall installation, first time central heating systems and cavity and loft insulation. The funding has come from different sources, including government departments, local authorities, fuel supplier obligations [see “Energy Company Obligation (ECO)” good practice] and client funding. The scheme has been required to quickly adapt to changes in funding opportunities and explains the current funding available to clients in a clear manner.

More recently (since 2014) the scheme has also delivered home energy advice visits to customers, giving behavioural advice specific to their property to help clients lower their fuel bills and/or increase the comfort in the property. This includes supporting people in switching their energy suppliers in order to achieve lower cost energy tariffs.

When the Warm & Well scheme was first established in 2001, it received pump-priming funds from the government sponsored HECAAction (Home Energy Conservation Act) programme. In subsequent years, the majority of funding has come from:

- Local Authority partners: Between 2001-2015 local authority grant funding for energy efficiency measures for privately owned homes has been delivered through Warm and Well. These funds were managed as a single grant scheme known as Gloucestershire Energy Efficiency Grants (GEEG). In 2015/16 Stroud and South Gloucestershire provided GEEG funding for clients.
- The National Health System (NHS): This support has aided the development of promotional materials and funded home visits to vulnerable households.
- The Department of Health: The consortium was successful in securing funding from the Department of Health’s ‘Warm Homes Healthy People Fund’ to undertake work with partners to assist vulnerable people living in cold homes winter. The fund provided grants for energy efficiency measures and funding for marketing, events and home visits.
- Fuel suppliers: In April 2013 the new Energy Company Obligation was introduced - an obligation placed upon the energy companies to invest in energy saving measures and reduce domestic carbon emissions. The funding from suppliers under these obligations has provided a significant proportion of capital funding of works for Warm and Well over the years, and has been obtained either directly through bilateral agreements with the suppliers or via installers listed by the suppliers.

- The Department for Energy and Climate Change: has funded two projects, the Green Deal Pioneers and latterly the First Time Central Heating Fund, a project ongoing in 2016/17.

#### LOCAL CONTEXT

The presence of an independent, impartial not for profit organisation such as Severn Wye has enabled the Warm & Well programme to achieve significant results. With reducing Public Sector funding and resource to provide such services directly, Severn Wye has been in a strong position to be able to engage with eligible clients year on year and as a result of the impartiality, is seen by customers as a trusted organisation able to focus on their needs without prejudice.

With this in mind, Severn Wye has established hundreds of partnerships with other support organisations such as local Citizen Advice Bureaus, Age UK, and Social Care Groups where strong referral networks are in place to ensure customers are signposted as appropriate to support that is aligned to their requirements.

Whilst it takes time to establish a strong brand, the benefits of achieving a long term programme of support is clear – the results below demonstrate just this!

#### STRENGTH

Utilising a strong relationship with the local Public Sector has enabled Warm & Well to continue to receive financial support year on year as it helps to meet a number of changing statutory requirements whilst simultaneously maintaining a simple and clear offering to householders in the participating region. As resources become increasingly stretched within the Public Sector, the strength of using a dedicated delivery partner such as Severn Wye is that it is possible to focus on specific delivery at the same time as integrate a range of disparate programmes in a uniformed way so as to ensure clarity of message for those in need of support.

#### OPPORTUNITY

There is an underlying strategic opportunity present in the approach of Warm & Well, which means that not only can local policy be influenced, but the region can also benefit from new opportunities that appear as a result of having a delivery mechanism already in place that is ready to take on new avenues of funding. This means that it is not necessary to set up new systems for new opportunities as they can be merged into existing frameworks, which not only offers the benefit of providing a holistic and cohesive service provision, but that it can also achieve it at a lower cost than would be the case if all systems needed creating from nothing.

#### THREAT

The main threat to Warm & Well comes from a combination of reduced funding availability from the Public Sector and a change of focus that has reduced statutory priorities away from Environmental issues.

Contracting budgets from the Public Sector means that they must focus their resources on current statutory requirements. These are largely focused around a) their own income generation and b) provision of Health support to their residents. As such Severn Wye has to integrate the Warm & Well programme with Local Authority priorities, which at the current time is possible as a result of the direct links between Health and warm and affordable housing. However, with changing priorities, it is possible that in the future it will become less possible to draw such links (subject to the direction that changing priorities take), and as such the need for independent delivery organisations such as Severn Wye to consider their own income diversification opportunities is paramount.

#### LESSONS LEARNED

There are a number of key lessons we have learned in developing and delivery of Warm & Well, and the key lessons are:

- Partnerships with other local service delivery organisations are essential for the long term success of the programme and the need for a clear and simple message for the end users.
- Maximisation of external funding streams enables a strong service to be maintained – it allows more external funding to be utilised, thus reducing the requirement on householders to spend money (they often don't have) on energy saving improvements.

Continued availability of a delivery mechanism (the infrastructure that enables such programmes to be delivered) is essential in enabling the region to attract further revenue from new initiatives on an ongoing basis.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy consumption classification.
- Number of households engaged in support programmes: 80,000.
- Annual energy savings in households.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Since 2001 the scheme has given energy efficiency advice to more than 80,000 residents across the participating regions, installed over 65,000 measures in over 41,000 properties.

678,327 tonnes of CO<sub>2</sub> has been saved over the lifetime of measures that were installed through Warm and Well since 2001. 17,452 tonnes of CO<sub>2</sub> saved each year from measures installed through Warm and Well since 2001. More than £30 Million has been invested in home improvements, with as little as 11% of this coming from householder contributions.

#### EVIDENCE OF SUCCESS

The Warm and Well scheme has been highlighted as an example of good practice in several best practice guides and toolkits, and in June 2006, was awarded first prize for energy efficiency at the “Ashden Sustainable Energy Awards”. In 2014 Warm & Well was nominated for the EU Managenergy Award for local action, and awarded joint second prize with Severn Wye’s colleagues at the Andalusian Energy Agency.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

There needs to be a commitment toward longer term improvement of housing stock within a region from the Public Sector that is closely linked to the understanding of all associated problems for people living in poor quality or unaffordable homes. In line with this is a need for capital funding to be available in order that it can be accessed by those most in need without requiring a significant contribution from them towards the planned improvements. As the benefit of installed measures are often not realised until after they have been installed, it will be difficult for people to justify making significant contributions towards the cost of measures if they are required to do so.

#### TIME REQUIRED TO COMPLETE THE BP

Approximately 2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

Severn Wye Energy Agency

##### TYPE OF ORGANISATION

Independent, not for profit sustainable energy education charity

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[www.warmandwell.co.uk](http://www.warmandwell.co.uk)



REGION GLOUCESTERSHIRE, UK



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Energy Company Obligation (ECO)

**PARTNER REGION**

Gloucestershire, UK

**LOCATION DATA**

UK

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments
- Activation of demand and combating energy poverty

**DESCRIPTION OF THE PRACTICE**

The ECO is a financial obligation that is placed on energy suppliers that have either more than 250,000 domestic customers or provide 400 gigawatts of electricity or more than 2,000 gigawatts of gas. It is a government energy efficiency scheme to help reduce carbon emissions and tackle fuel poverty. It is administered by the industry regulator OFGEM (the office of gas and electricity markets) who impose sanctions on fuel suppliers who do not achieve their targets to reduce carbon emissions and tackle fuel poverty. They also report back the results to the Department of Business Energy and Industrial Strategy (BEIS) and the Secretary of State. The suppliers are given targets based on their share of the domestic gas and electricity market. The scheme focuses on installing heating and insulation measures and supports vulnerable consumer groups.

The funding comes from a mixture of fuel supplier investment and a levy on all fuel bills which have been reduced significantly over the last 3 years reducing the pot from £1.3bn to £640m. We are currently in phase 2 of ECO which is due to end in March 2017.

The key stakeholders are:

- Department of Business, Energy and Industrial Strategy (national policy)
- OFGEM (regulation)
- Local Government (local policy and implementation)
- Energy Saving Trust (NGO)
- Energy Services Companies (industry)
- National Energy Action (fuel poverty charity)
- Energy Agencies (local implementation)

The obligation is split into 3 categories.

1. Carbon Emissions Reduction Obligation (CERO). The key target group:
  - Able to pay (private and social housing)
2. Carbon Saving Community Obligation (CSCO). The key target groups:
  - Low income
  - People receiving certain benefits and living in private domestic properties
  - Vulnerable households in rural areas
3. Home Heating Cost Reduction Obligation (HHCRO). The key target group:
  - People receiving certain benefits and living in private domestic properties

Initially there was no client contribution but since the funding has been decimated in order to ensure high numbers there is often a client contribution required. This reduction of funding has impacted the delivery of the programme to the low income and vulnerable demographic. Phase 3 of ECO will commence in April 2017 for 5 years with the strategy focus being fuel poverty. Details have still to be released on the specific details.

**LOCAL CONTEXT**

As there is no regional apportionment of the funding, local government and devolved administrations (Scotland, Wales and Northern Ireland) have invested in local programmes to attract and maximize ECO investment into their area. Essentially, the more local, or matched funding (from the private sector) identified, the increased likelihood that ECO funding can be attracted to any given region.

**STRENGTH**

Across Gloucestershire we have established two funds for insulation GEEG (local government provision of the 'Gloucestershire Energy Efficiency Grant') and GEEG+ (funding provided by the Clinical Commissioning Group (CCG)). This additional investment covers the client contribution and ensures that vulnerable and low income households can still access measures. Severn Wye currently provides the delivery mechanism for these funds.

#### WEAKNESS

HHCRO is mainly focused on gas boiler replacement and this has negatively impacted investment in areas that are off the gas grid.

#### OPPORTUNITY

This market failure is being addressed via a separate £20m Central Heating Fund pilot to help install first time central heating and increase connectivity the mains gas pipeline where practical. It is likely that this will form part of the new obligation in ECO 3 to be launched in April 2017.

#### THREAT

General budget cuts means that everyone is fighting to attract funding and those with the most local investment or the ability to scale up programmes with higher carbon yield will benefit to the detriment of those with less potential.

#### LESSONS LEARNED

It is vital that local energy agencies are engaged with the key stakeholders and are planning ahead for the future. While local government funds are being cut, public health funding is widely available where it can be evidenced that the funding is reducing the impact of cold damp homes and keeping people safe and well at home as opposed to in hospital or social care. Our recent £200k investment from the CCG will hopefully be the start of further and wider investment that will supplement ECO 3 which will, as we know, focus on fuel poverty.

Utilizing an independent delivery mechanism (such as Severn Wye Energy Agency, or others) not only gives trust and credibility for the end user beneficiaries, but it also means that wider opportunities can be joined up enabling significantly more 'on the ground' impact to be achieved.

- Performance indicators linked to the practice
- **Number of households engaged in support programmes: 1,169,521**
- Number of households with improved energy labelling
- Number of households with improved energy consumption classification
- Number of households engaged in support programmes
- (kWh) Annual energy savings in households

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

##### Outcomes for ECO1: Jan 2013 - March 2015

**1,169,521 households received ECO support between January 2013 and March 2015.** This is 44.5 households from every 1000. The highest concentration was in North-West England at 71.8 per 1000 households.

CERO 18.33 MtCO<sub>2</sub> lifetime measures - 593,042

CSCO 9.87 MtCO<sub>2</sub> lifetime measures - 382,982

HHCRO total lifetime cost savings £5.16bn, measures - 433,657

For more info:

[https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/eco\\_final\\_report\\_0.pdf](https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/eco_final_report_0.pdf)

#### EVIDENCE OF SUCCESS

All ECO1 programme indicators were achieved or surpassed. It was a catalyst for major investment and jobs growth in the energy services sector. This success of ECO1 has led to ECO2 being delivered, and from April 2017, it is expected that ECO3 will be launched.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

An equivalent scheme would need national policy implementation and wider support in skills and growth for the energy services/construction sector.

#### TIME REQUIRED TO COMPLETE THE BP

12-24 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

Severn Wye Energy Agency

##### TYPE OF ORGANISATION

Private SME and not for profit sustainable energy education charity.

##### WEBSITE

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REGION GLOUCESTERSHIRE, UK



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**ACHIEVE – Actions in low income Households to Improve Energy efficiency through Visits and Energy diagnosis**

**PARTNER REGION**

- Liaison Committee for Sustainable Energy, *France*
- (GERES) Groupe Energies Renouvelables, Environnement et Solidarites, *France*
- Severn Wye Energy Agency, *Gloucestershire, UK*
- Caritasverband (CARITAS), *Frankfurt, Germany*
- Focus Association for Sustainable Development, *Slovenia*
- Energy Agency of Plovdiv (EAP), *Bulgaria*
- Institute de l'Ecologie en Milieu Urbain (IDEMU), *France*

**LOCATION DATA**

Wiltshire, UK

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

A number of training and work experience placements were offered to job-seekers through the local Job Centre. A guaranteed interview was then offer at the end of the work experience placement. The training was aimed at people who had no previous experience in working in the energy sector or in energy advice.

Home visits were offered to vulnerable clients in the Trowbridge area of Wiltshire; these were carried out by the new trained energy advisors. Each client received two visits which produce a broad range of recommendations for clients, with the aim of saving households an average of 10%.

**Visit 1:** Assessed in detail the clients energy and water consumption in the home and will lasted around 2 hours.

**Visit 2:** The advisor then visited a second time to give the client a written report showing where and how the client could reduce their energy use. The advisor explained the information in the report, and answered any questions the clients had. The advisor also fitted free energy saving devices where appropriate and giving them tips on small changes in behaviour that will help to save even more money.

**COMPLEMENTARY BENEFITS**

- Training and development of new energy advisors
- Job creation for people out of work

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy consumption classification

- Number of households engaged in support programmes: 136
- (kWh) Annual energy savings in households
- Training and development of new energy advisors: 9
- Job creation for people out of work: 9

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- 136 home visits were carried out. From these a total of £6062.81 per year was saved from customers' bills, averaging £44.58 per household/year. This equates to 19374.93 kg of CO<sub>2</sub> saved per year, averaging 142.46 kg of CO<sub>2</sub> per household.
- Nine advisors were recruited and trained during the project.

**EVIDENCE OF SUCCESS**

Across the 136 properties, 1319 energy saving devices were installed; this included 572 energy saving bulbs (82 LEDs), 372 reflective radiator panels and 272 TV power downs. In addition, as a result of referrals made through the scheme, further energy efficiency measures were installed (boiler upgrades, loft and cavity wall insulation) that are estimated to save a further £855 and 3640kg of CO<sub>2</sub> per year.

Customer satisfaction with the service was high (the average was 8.9, where 10 was very satisfied). 95% found the energy saving tips and recommendation provided helpful (30%) or very helpful (65%). 95% also said they found the energy saving devices installed on the return visit helpful (21%) or very helpful (74%).

Nine advisors were recruited over the period of the project on either a fixed term contract or a zero hours contract. Recruitment was targeted at people who had been out of work. The tar-

geted individuals were offered a training course, work experience and a guaranteed interview. The training was aimed at people who had no previous experience in working in the energy sector or in energy advice. All advisors reported that they liked the job, one commenting that they 'get a great deal of job satisfaction.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

Newly trained energy advisors required a lot of support from supervisors; this should be allowed for in time allocations.

Generating interest in visits can take a significant amount of time. It would therefore be beneficial to conduct the project in an area where existing relationships with potential clients and stakeholders are held. It is important to consider whether the newly trained advisors can drive/have access to a car or use reliable and accessible public transport.

Consider the ability of the recruits and their confidence to do the job. It is important to provide day to day mentoring and support.

**TIME REQUIRED TO COMPLETE THE BP**

36 month

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

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**ORGANIZATION**  
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**TYPE OF ORGANISATION**  
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**WEBSITE**  
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REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Cynefin

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

Wales, UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Innovation

### DESCRIPTION OF THE PRACTICE

Cynefin was a Welsh Government programme that aimed to explore new approaches to the delivery of long term improvements to community well-being across Wales. It broke away from the traditional competitive, style delivery models for community development, driven by targets and reporting, and aimed to engage and collaborate with communities and across sectors to share services and goals.

The Cynefin project covers a very wide range of projects including:

- *Stronger Resource Efficiency for desirable communities: How local innovation in asset stewardship ensures a green and prosperous economy*
- *Tackling poverty*

All details can be found: <http://www.cynefin-wales.org.uk/resources.html>

The Cynefin programme was built around three main aims:

#### Place

to deliver real improvements to the wellbeing and quality of life of people in deprived areas, through engagement, involvement and empowerment of communities to develop sustainable place-based projects.

#### Process

to explore and support novel ways of working and to demonstrate how cross sectorial working and creating new partnerships could inspire creative solutions to deeply engrained issues.

### Policy

to provide evidence and real-time learning about delivery, policy barriers and policy drivers to inform local and national policy development.

Cynefin employed eleven "Place Coordinators" who each engaged with a deprived community in Wales. Within these communities, the Place Coordinator:

- facilitated the community to build a shared vision for what was needed to improve the quality of life in their area
- facilitated collaboration between the existing organisations, service delivery agents, third/private sectors and residents, to work together to come up with creative solutions
- provided real time feedback and learning into the programme and policy development

Evaluation and active learning was built into Cynefin from the outset. The programme managers worked alongside an independent research and strategy consultancy to develop a learning framework to capture the multiple benefits and added value of the Cynefin ways of working, which was reported on a quarterly basis following feedback from Place Coordinators, stakeholders and management. This pioneering evaluation process allowed continuous flexibility to make changes throughout the programme and to feedback to policy makers.

### PROGRAMME MANAGEMENT AND GOVERNANCE

The Cynefin management team consisted of representatives from Severn Wye and Welsh Government, who worked together to enable real-time information flow and learning. In addition, a Place Leadership and Advisory Group was established to both steer and share learning from and with Cynefin, which brought together academics, local authorities, and senior practitioners already working in a place-based way.

### STRENGTHS

- The programme had no predetermined targets; to ensure that the work in each area would arise from engagement and dialogue with all community stakeholders.
- The Place Coordinators did not deliver community projects but instead facilitated collaboration, built capacity and empowered communities to take on projects themselves.
- As independent facilitators, Place Coordinators have been able to identify duplication and synergies between service providers and to bring them together to work in an integrated, collaborative manner.
- By involving the community and stakeholders throughout the process, a sense of ownership of work streams, services and assets is created, which ensures that continuance of projects is more likely to be achieved.

## WEAKNESSES

- Small grants to support community engagement activities, pilots or to collect local data may have allowed early investigations of work streams to progress more rapidly.
- Phased funding of the programme (based on results) particularly at early stages did not support the transformational change and long-term approach required to tackle deep issues in a sustainable way, beyond the initial 1<sup>st</sup> year trial the additional 2 years was beneficial but in reality this type of programme requires a minimum of 4 years funding.

## LESSONS LEARNED

- Early engagement with all stakeholders is essential to build long-lasting relationships.
- Creating a shared vision and mandate between all stakeholders and then empowering all to take action is necessary
- Independence from specific programmes, funders or vested interests but with high level government backing was essential.
- Permission to challenge the status quo and roam across public sector silos was required to provide creative and joined-up solutions to complex issues
- Trusting, responsive and constructively critical management was needed to support the delivery officers this also required flexibility from the funders and the space and freedom for delivery officer to be responsive to place context

## PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households engaged in support programmes: 3899 residents

The monitoring approach consisted of a narrative account based mainly on qualitative evidence and case examples, produced as a quarterly report by an independent consultancy firm. This was supported by a set of 11 cross-cutting indicators that covered a range of place and process outcomes.

## INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The quantitative data showed that, by mid-March 2016, Cynefin had: catalysed 59 work-streams (although some had become inactive) and over 270 new working groups, networks and partnerships; actively engaged more than 10,000 individuals and organisations; secured over 38,000 hours of time for Cynefin-linked activities from individuals and organisations (including public sector bodies); unlocked over £1.73 million of funding; and enabled over 2600 community members and professionals to receive mentoring and training. Several places were waiting to hear the outcome of funding applications and therefore the final figure for funding secured for Cynefin-linked activities will ultimately be higher.

**3899 residents were actively involved in Cynefin-linked activities. This rose from 541 in the first quarter to 3899 by the end of the fifth quarter.** 8097 hours were contributed to activity with residents. £2670 was directly linked to residents whilst the majority of funding went to charities and the public sector to support residents.

## EVIDENCE OF SUCCESS

Cynefin was able to feed into the development of National policies, including the Environment Act, Public Health Bill and Wellbeing of Future Generations Act. Communities were empowered to take action to improve quality of life and wellbeing in their places.

Public Sector bodies were trained and supported to understand and consider new ways of working internally and within their communities. This acted as a forerunner to the 5 Ways of Working they are now required to demonstrate under the Wellbeing of Future Generations Act – Involvement, Collaboration, Long-Term, Integration and Prevention.

One of the key elements of Cynefin was that success was not defined by hitting KPIs and targets – when you measure a piece of work by predefined targets and measures that's what you get but it doesn't always actually deliver the changes you need. Cynefin was about understanding what was needed for the people in those communities and helping them to achieve that – we were most accountable to those we were supporting and not those measuring our performance. The best evidence of success therefore comes directly from them.

See communities telling us themselves why and how Cynefin worked for them at <http://www.cynefinwales.org.uk/resources.html#collapse-869>.

## FACTORS THAT MIGHT HAMPER THE TRANSFER

Cynefin was an entirely new way of working for community developers, managers, evaluators and funders. The approach developed throughout the 3 years and required commitment, bravery, training and support for all. Now we understand how it worked and why we have a reasonable understanding of the critical factors/ Whilst many of these can be factored into delivery e.g. flexible targets, funding structures, engagement training etc., many factors are also related to behaviour, ethos and approach. This approach requires a high level of trust, willingness to take risk and learn from failure.

## TIME REQUIRED TO COMPLETE THE BP

3 years

## CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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### TYPE OF ORGANISATION

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### WEBSITE

[www.severnweye.org.uk](http://www.severnweye.org.uk)

[www.cynefinwales.org.uk](http://www.cynefinwales.org.uk)



REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Target 2050

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

Stroud Local Authority area, UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- Innovation
- New financial instruments

### DESCRIPTION OF THE PRACTICE

#### What was the reason for commissioning the project?

Stroud District Council were aware that there was a need to increase the rate of retrofit in their properties in order to meet the 2050 carbon reduction targets. As many buildings in the district are old and there is wide range of property types, many existing households did not fit the standard retrofit options available so uptake of incentives was not as high as it could be. This also applied to businesses and community buildings which were facing financial pressures and were important hubs for the community both socially and economically. As a result, Stroud District Council commissioned Severn Wye Energy Agency to complete the Target 2050 project. The name was inspired by the headline National target for a 60% reduction in carbon dioxide emissions on 1990 levels by 2050.

#### What is Target 2050?

A programme of local activity which was developed to complement what was provided through the market and/or national programmes. This consisted broadly of:

**Target 2050 Homes:** Development of a targeted approach to achieving deep carbon cuts in existing homes.

**Target 2050 Business:** Bespoke advice for SMEs, with on-site surveys and action plans. This was designed to complement the Carbon Trust provision by targeting those whose annual energy spend was below their threshold for face-to-face support.

**Target 2050 Community Buildings:** On site surveys, advice and help with finance for measures to improve energy efficiency and promote renewables in community buildings.

The programme also incorporated completion of the **Eco-Management Scheme (EMAS)** for the local authority's own operations and support for development of forward-looking planning policy through mapping of heat loads and resources for renewable energy against housing needs.

#### How did Target 2050 Homes work?

The project aims were:

- Providing an effective framework for significantly reducing carbon emissions for the domestic sector
- Providing a significant range of examples of how existing technologies might be used to achieve deep carbon cuts in existing homes, while preserving built heritage and character
- Stimulating the local market for sustainable energy retrofit
- Alleviate fuel poverty by 'future-proofing' local homes
- Enabling local suppliers to participate in this area of economic activity

The main features of the programme were the development and delivery of:

1. An *expert advice programme* to support whole house sustainable energy retrofit. This included a home survey, a report and follow-on support.
2. Ongoing support for *an installer network*

covering a range of relevant technologies with an inclusive, capacity building ethos. Installers were provided with support, networking events and advice through events, meetings and newsletters. All installers had to be accredited to named organisations and were able to explain the financial support mechanisms in place as part of their work, increasing the benefits for both consumer and installer.

3. A *set of case study homes*, broadly representative of the range of building types in the area, to illustrate the barriers and solutions to achieve deep carbon cuts through sustainable energy retrofit. 23 from 200 homes were selected based on a clear set of criteria. Each home had a full energy survey, an action plan, support to install as many measures as possible during the project including applications for grants where applicable. Up to £6000 additional support towards the cost of measures from a dedicated fund was also available. Low income households were able to apply to another allocated local authority fund to largely, or completely, cover the cost of installations.

The participating households Monitored their energy use and provided meter readings to the project team. They also took part in a behavioural change programme and had regular contact with the project team and each other through meetings, events and a website.

A further 37 exemplar homes have been developed through the extension of the Stroud Target 2050 approach into neighbouring areas.

4. An *effective communications programme* to make knowledge and experience available throughout the community. The behavioural change programme aimed to complement the core advice service through:

**Feedback:** Enabling and encouraging households to monitor energy use, to see what they have (or have not) achieved and take further action. Participating households were asked to log energy use on a monthly basis and this was fed back to them annually. More immediate feedback was to be provided through a locally-developed energy monitoring system known as “EMU” (Energy Monitoring Utility).

**Peer group support:** Motivating households to maintain energy saving behaviour through interaction with the other households in the group, developing a sense of being part of a club, and physically enabled via the project website, newsletters, social gatherings and events.

**Sense of agency:** A term sometimes used with regard to pro-environmental behaviour, in that if people feel empowered that they CAN make a difference if they make certain decisions, then they are more likely to do so.

5. A *pilot PAYS (Pays As You Save) loans programme*, to test consumer interest in this approach and learn practical lessons about delivery. During the final year of the programme the opportunity arose to join the Department of Energy and Climate Change Pay As You Save (PAYS) pilot, and Stroud District was one of just five pilots

selected. It was relatively straightforward to apply the approach to the Target 2050 programme, as the appropriate partnership was already in place, together with a relevant advice approach with the requisite quantification of potential savings, and an installer group covering the necessary technologies. The District Council Environmental Health team adapted their grants and loans programme to meet the needs of a long-term loan repaid in monthly instalments, alongside the Council tax billing system, and put the necessary legal framework in place. A charge was registered against the property on the Land Registry to provide security for the loan in case of change of ownership. The PAYS loans programme was used in combination with bespoke advice about other grants and funding mechanisms available. This created a trusting relationship and avoided homeowners feeling overwhelmed.

### How did Target 2050 Community Buildings work?

The project’s main focus was to ensure the uptake of energy efficiency and renewable energy measures in all participating community buildings, creating a number of ‘exemplar’ halls that demonstrate that an energy-efficient hall is a better asset to the community, a more viable business opportunity and can act as a catalyst for change across the community.

Support, advice and an on-site energy audit plus written report was offered to 30 Stroud District village halls and community buildings over the two years on a ‘first come, first served’ basis.

Severn Wye contacted all halls in the district in Year 1 and invited them to fill in a short application form. The first 10 eligible applications received were offered a full energy audit in Year 1 with remaining halls being put through to Year 2 when another recruitment campaign was carried out to fill the remaining places. All participating halls were required to provide Severn Wye with at least one year’s worth of fuel bills prior to audit to help determine energy consumption patterns, check tariffs and any standing charges.

Once a building had been accepted onto the scheme, Severn Wye carried out an on-site energy audit accompanied by a relevant member of the committee and/or caretaker. The walk-round survey examined all elements of the building fabric and heating systems and involved discussion with the hall representative regarding building history, hall user type and frequency, any heating or lighting control systems, how they are used in practice and any plans for the future. Severn Wye then produced an energy audit report designed to provide a useful, accessible, comprehensible summary of the main features of the building in relation to energy use.

The report then moved on to a section that provided a summary of the recommended actions that could be taken.

Severn Wye advisors remained available to the halls for ongoing support with the implementation of the projects. This further support included help with applications for funding, obtaining permissions, identifying installers, assessing quotes, preparing business plans and consulting with local residents and community members.

To assist halls with the installation of identified measures and technologies, Stroud District Council offered participating halls a capital grant towards the realisation of the project.

In Year 1 Stroud District Council made £20,000 available through the Target 2050 programme and £55,000 through a regeneration programme. Halls were able to apply for up to £3,000 without match funding but for amounts above £3,000 and up to the maximum of £35,000, match funding of no less than 50% was required. All grants in Year 1 were administered by the Council.

In Year 2 the grant level was altered due to reduced funding available and halls were eligible for up to £3,000 (max. 75% of total project costs) from a total grant pot of £30,000. Severn Wye took over the administration of the grants in Year 2. The audit reports included full details of complementary funding sources, both local and national, to which halls could apply for matching funds.

Where required, direct follow-up assistance was given with applications to organisations including the Gloucestershire Environmental Trust (which awards grants from Landfill Communities Fund monies), and other government, private sector and charitable funds.

At the time of the project, there was significant public grant funding available for renewable energy installations, principally the Low Carbon Buildings programme. This has since ended and been replaced by the FeedIn Tariffs.

During the second year of Target 2050 Community Buildings, Severn Wye organised a number of energy days and events when the participating halls could come together to discuss the

issues they were facing in implementing their sustainable energy projects and any lessons learnt. This was useful in encouraging halls to work together especially as many were facing very similar challenges.

### How did Target 2050 Businesses work?

The project had four key elements:

1. To fill the gap in service provision. Only businesses with an annual energy spend of more than £50,000 were eligible for free, face to face, energy saving support at the time the project commenced.

2. The essence of the project was to work with local SMEs to identify opportunities for them to reduce their energy consumption/CO2 emissions at the same time as reducing the rate at which their energy bills were increasing.

3. One very important aspect was to provide ongoing support up to the point at which measures were actually installed within businesses. To support this, a local sustainable energy installer network was established to deliver recommendations made in the energy reports.

4. The final element of work was to integrate this project with wider environmental support services available to businesses. By creating close working relationships with other service providers such as Business Link it was possible to achieve this.

The project proved very popular and successful. 120 Stroud-based businesses signed up to the scheme over four years with 93 receiving a full package of support.

The scope of this programme was developed from experience of two previous programmes: the Carbon Trust on-site support to larger businesses with an annual energy spend of more than £50,000, and the Carbon Trust/Energy Saving Trust partnership SME advice pilot, Action Energy, which ran from 2002 to 2004.

In both cases it was the business that was left to interpret the energy report, identify the specific energy saving measures (specific type of lighting, motor, pump or boiler) and then find a quality installer to undertake the work. As a result, many businesses did not get to the point of implementing the measures recommended, and energy and carbon saving potential was not realised.

The Target 2050 business service provided:

- free on-site energy surveys.
- a tailored report of findings.
- development of bespoke 'energy action plans' with each business.
- follow up support to research specific technologies.
- identification of qualified and accredited installers.
- help with reviewing quotes for works being considered.

Initially our service was aimed at those businesses with an energy spend of £5,000-£50,000. As the project progressed, this was broadened to be available to businesses with an energy spend of less than £5,000 at the request of the Federation of Small Businesses and other partners.

At first it was difficult to recruit businesses to the scheme with many companies appearing suspicious of an unknown agency approaching them. However, working with known and trusted organisations such as Business Link and the Council has greatly increased the number of companies joining the project.

The top five measures installed by Target 2050 businesses were:

1. Improved monitoring of energy use.
2. Development of an energy policy.
3. Installation of more efficient lighting.
4. Increase in levels of draught proofing.
5. Undertaking competitive tendering for utilities.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling.
- Number of households with improved energy consumption classification.
- **Number of households engaged in support programmes: 102 (see overleaf).**
- (%) Reduction of annual primary energy consumption in public buildings.
- **(kWh) Annual energy savings in households: 70,290 kWh/year energy savings.**
- Number of households with improved energy consumption classification.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

#### What were the key outcomes of the Target 2050 Homes project?

- The surveys indicate the potential to achieve an average annual reduction of 58% in CO2 emissions, 57% in energy consumption and £960 on fuel bills, by applying known and available measures.
- **102 of the households surveyed are known to have gone on to install energy saving measures which could reduce their energy consumption and carbon emissions by an average of 24%, and their fuel bills by £406.**
- Of the 50 case study homes, the ten with the greatest savings potential as a result of the measures already installed could achieve carbon savings of 41-74%, energy savings of 22%-70% and fuel bill savings ranging from £186 to £2,160.
- The top ten homes all addressed heat loss in one form or another. Five of them switched their main heating fuel and a further four improved the efficiency of their heating by replacing their gas or LPG boiler.
- Between £14,000 and £47,000 was invested in each of the top ten homes.
- No obvious direct correlation was found between the amount of money spent and the carbon savings achieved, due mainly to the wide variation in practical opportunities for improvement, as well as differing priorities and restrictions for each household.

## What were the key outcomes of the Target 2050 Community Buildings project?

The project results show a significant uptake of a wide range of measures including:

- Fifteen lighting and glazing upgrades – these are relatively straightforward measures that can be usually installed within the £3,000 Target 2050 grant
- Six upgraded heating systems and controls – for halls that are on mains gas, upgrading to a more efficient boiler with proper controls is very often the most cost-effective solution
- Three solid wall and sloping ceiling insulation measures – it is very encouraging to see some of the halls tackling the difficult issue of insulating solid walls and sloping ceilings. The capital grant was key to these going ahead
- Three ground source heat pumps, five new solar PV systems installed or approved, and a solar thermal hot water system helping halls to generate renewable energy and reduce costs into the future

The savings made during the project were:

- 70,290 kWh/year energy savings
- £4938 cost savings
- 28.6 tCO<sub>2</sub>/year carbon savings
- £105,210 lifetime cost savings (based on 2008 energy prices)
- 630 tCO<sub>2</sub> lifetime carbon savings (assumes 60% of units exported; benefits quantified are savings only)

A small number of halls used the opportunity to obtain capital grants and technical support to install several measures simultaneously as part of a significant refurbishment. These became the 'exemplar' halls and continue to be a source of inspiration and motivation to other halls and the wider community.

Several of these halls have been nominated for awards and all have reported lower bills and warmer, better-used halls and interest from users as to why and how the changes have been made. All of these halls were successful at using the Target 2050 capital grant to lever in significant resources from other funders.

Another key result of the project was the amount of external funding that has been 'levered in' to the district as a result of the programme. The grants and support offered by Target 2050 enabled these halls to apply for the remaining funds from a wide variety of sources. By May 2012, in excess of £191,000 was levered in by Target 2050 Community Buildings. The figure increased further once all projects were completed. The vast majority of this funding has been directed at local Target 2050 Installers' Network companies which have carried out the work. This has been of benefit to the local economy and increased the experience and portfolio of these local businesses.

## What were the key outcomes of the Target 2050 Businesses project (2007-2011)?

- 1,300,000+ kWh of energy
- Cost savings of at least £99,500
- Saving of 490+ tonnes of CO<sub>2</sub> emissions
- 93 businesses accessed the full service
- 22 smaller businesses offered telephone advice only
- 46 businesses signed action plans

### EVIDENCE OF SUCCESS

#### Target 2050 Homes

Target 2050 Homes has provided the basis for an effective longer term targeted approach to achieving deep energy and carbon cuts in existing homes, including:

- An advice approach and advisor experience in identifying and prioritising a range of energy and carbon saving measures in a range of house types, and with a range of households, including development of a tailored home energy report and provision of 248 detailed home surveys
- A significant range of 50 case study homes, illustrating what can be achieved and how, and the practical barriers and solutions encountered in applying solutions
- A model for dissemination through events and seminars, case studies, and 'open homes', raising awareness of the opportunities with both householders and installers
- Stimulation of the market for sustainable energy retrofit through development of a local installer network, which now has over 100 members installing a range of energy efficiency and renewable energy measures
- An understanding of the costs and householder perspective on investing in improvements, and the practical issues as regards financial support mechanisms, through the experience of managing grants programmes and the PAYS pilot, and in supporting households in identifying finance and obtaining quotations for works.

The overall conclusion is that there is significant value in moving forward with an integrated non-profit local partnership model which builds further upon these positive features. By extending this to neighbouring local authority areas, we aim to achieve some economies of scale while maintaining the benefits of local knowledge and a personalised service.

The evaluation of the PAYS pilots indicated householder preference for a programme led by public/non-profit providers that are commercially impartial, and the importance that they placed on practical knowledge and expertise. In the emerging market for sustainable energy retrofit, this depends upon an open and transparent sharing of experience, and a culture of continuous learning and improvement.

While a streamlined customer journey is a positive ideal, the value of allowing for multiple entry points to a service should be recognised, and to facilitate this it is important to engage all key actors and to ensure that communication lines remain open so that problems can be resolved as they arise.

### Target 2050 Community Buildings

In addition to the outcomes shown above, the Target 2050 Community Buildings project demonstrated that the provision of bespoke and expert advice, coupled with capital funding, can kick-start community buildings into action and enable important improvements to be made quickly. Many halls are then able to build on these successes and lever in further funding to complete the transition into exemplar buildings that are cheap to run, nice to use and can encourage the uptake of sustainable energy measures in the wider community.

Since the completion of the project in Stroud, the approach has since been expanded to other areas, including Swindon, Wiltshire, the Forest of Dean, Wales and Herefordshire, with similar success.

### Target 2050 Businesses

Further to the savings mentioned above, there was a 32% increase in Target 2050 businesses consistently checking energy bills against meter readings and 18% increase in businesses using actual meter readings rather than estimated readings when paying invoices.

The programme has helped almost 100 organisations to take a serious look at their energy use and their potential to generate renewable energy. The extensive follow-up support and advice provided ensured that the businesses went on and implemented a wide range of actions that have resulted in significant ongoing cost savings for many of these companies.

By reducing demand and increasing local renewable energy capacity, the Target 2050 project has helped local companies to be:

- more financially secure through difficult times
- less vulnerable to energy price hikes in the future
- more streamlined and self sufficient

The project also further boosted the environmental credentials of not only the businesses and installers involved but the whole of Stroud district.

The Target 2050 Business scheme has since been used to develop similar programmes in other districts, including future paid-for services where funding is not accessible. Following the project, Stroud District Council continued to offer a 50% subsidised service to their small and medium sized businesses.

### Factors that might hamper the transfer:

The transfer of the **Target 2050 Homes** project to other partners is very possible providing the partnerships between active agencies are strong and planning is detailed. It is also important to consider the scope of area covered. The ideal programme should ensure that it is:

- tailored to the practical realities of the existing building stock and its complexity and imperfections
- designed to deliver to the real and multiple practical needs of households and homeowners
- able to engage with all key actors in the supply chain, and deliver to their needs
- intelligent, and can flex and develop as providers learn, markets develop, and external factors change
- open and transparent, allowing benefits

The transfer of the **Target 2050 Community buildings** project to other partners is very possible. However, partners should account for the fact that timescales for the implementation of measures in community buildings can be very protracted. The community buildings in the UK are run by volunteers working in their own time (often around work commitments) and with limited resources. Partners will need to account for this if the set-up is similar. The following key themes and learning points emerged from the project and would be worth considering in other partner areas:

- Help with simple behavioural change and better heating control usage is crucial
- Learning to deploy the 'sustainable energy hierarchy' when planning improvements
- Finding reputable installers
- Provide support in negotiating with planners, with regard to heritage buildings
- Communication with hall users and the wider community about the improvements
- Capital grants were vital in making small measures happen quickly, as well as enabling larger ones
- Critical under-utilisation of halls leads to very long payback times for some measures
- Improved halls report better utilisation, raising income and reversing the negative cycle
- Small savings make a big difference to constrained budgets

The transfer of the **Target 2050 Businesses** project to other partners is very possible, providing a number of factors are considered. For example, it is crucial that there are financial gains for the businesses concerned. It's also important to consider how businesses are engaged. The Target 2050 Business project took a while to take off until it was linked in via organisations that businesses trusted and used regularly. Once this happened, the uptake increased rapidly. Further points to consider are noted below:

- The private sector is driven by the need to generate profit and the reduction of overheads and running costs are critical to this objective. As a result there is often a healthy appetite amongst businesses to reduce energy costs although very often support is needed to identify the most effective options
- Giving detailed illustrations for the potential for year on year cost savings within the individual business energy reports was also key to achieving commitment to install measures from business owners
- Where capital investment was required for measures, particularly for those with longer payback periods, the availability of financial support mechanisms such as grants, loans and tax incentives greatly increased the likelihood of uptake.
- The focus on no-cost measures and especially improved monitoring proved very important – the end of project surveys showed a 32% increase in Target 2050 businesses consistently checking energy bills against meter readings and an 18% increase in businesses using actual meter readings rather than estimated readings when paying invoices

- The ongoing financial savings for local businesses involved are significant, with Stroud-based businesses now saving almost £100,000 on energy bills annually. This is money that would otherwise have predominantly passed out of the district to electricity, gas and fuel suppliers but is now helping these businesses to be more competitive and survive in difficult economic times.

It became apparent early on in the project that recommendations would be prioritised not solely on the basis of cost or saving potential but also on the wider business impacts. This shows that whilst businesses are prepared to consider energy saving initiatives, these will always be secondary to day-to-day priorities.

#### TIME REQUIRED TO COMPLETE THE BP

2-3 years depending on how many themes are completed

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### TYPE OF ORGANISATION

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##### WEBSITE

[www.severnwye.org.uk/fileadmin/Resources/SevernWye/Publications/Target\\_2050\\_Homes\\_-\\_Report.pdf](http://www.severnwye.org.uk/fileadmin/Resources/SevernWye/Publications/Target_2050_Homes_-_Report.pdf)  
[www.severnwye.org.uk/fileadmin/Resources/SevernWye/Publications/Target\\_2050\\_Community\\_Buildings\\_-\\_Report.pdf](http://www.severnwye.org.uk/fileadmin/Resources/SevernWye/Publications/Target_2050_Community_Buildings_-_Report.pdf)



REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

European Sustainable Energy Award for Prisons (E-SEAP)

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

### DESCRIPTION OF THE PRACTICE

E-SEAP is an award framework for prisons developed as part of an Intelligent Energy Europe project that was delivered between 2011 and 2014. The framework involves prisons being assessed against criteria under three main elements:

1. Buildings and Energy Management
2. Education and Training
3. Communities

Depending on their total assessment score, each prison then achieves either the bronze, silver or gold award (or, of course no award at all).

The project itself involved prisons having a preliminary assessment carried out in order to identify areas for development, followed by an intense period of external support, culminating in prisons being re-assessed towards the end of the project.

Under the buildings and energy management element, a full energy survey of the prison premises was carried out resulting in the production of a full report and action plan detailing where savings could be made. Severn Wye's business staff then supported each prison in implementing actions to achieve these savings.

Under the education and training element, Severn Wye's education staff supported prisons to delivering training to prison staff and the prisoners themselves. Prison staff received a two hour training session focussing on how they could save energy in the home. This made it relevant and incentivised them to take part, whilst helping to instigate positive behaviour change that also had in impact on prison consumption. This training was CPD accredited so that it could be used as evidence towards staff continuing professional development.

The prisoner training was delivered using one of two routes:

1. The delivery of a short two-day course delivered by Severn Wye staff.
2. The delivery of a longer, accredited course delivered by prison staff supported by Severn Wye staff.

There were three main aims of this training:

3. Improved energy-saving behaviour among prisoners, helping to reduce prison consumption.
4. Helping prisoners to gain employment post-release.
5. Helping to reduce rates of re-offending through reducing prisoner's energy bills post-release, helping them into employment and providing them with transferable skills.

Under the community element, the prison was supported in running events for visiting families and the community local to the prison. These events were aimed at alleviating fuel poverty and those attending received a range of information and support including being signposted to further sources of support.

### KEY LESSONS LEARNED

- The delivery of accredited training incentivises prisoners as they can see a potential route to employment post-release.
- Where possible this training should be linked to practical work experience to develop practical as well as academic skills.
- Prison staff is incentivised by thinking about how to save energy in the home but knock on benefits are also felt in terms of reducing the prison's own consumption.
- Prisons provide a key route to working with those in fuel poverty, both prisoner's families and the local communities surrounding prisons which are often located in areas of economic deprivation.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

• **Number of households engaged in support programmes: minimum of 350.**

The staff, prisoners and families were trained or given advice how to improve the energy efficiency in their homes.

- In the UK, 175 members of prison staff received energy efficiency training.
- 157 prisoners received accredited training.
- 18 prisoners received Severn Wye short course.
- 8 ‘energy surgeries’ held in prison visitor centres and areas surrounding prisons.

• (%) Reduction of annual primary energy consumption in public buildings.

The following reductions in energy use per prisoner were achieved in the UK prisons:

- HMP Cardiff: 11% (7% gross)
- HMP Hewell: 7% (0% gross)
- HMP Littlehey: 1% (joined the programme late) (5% gross)
- HMP Usk and Prescoed: 3% (8% gross)
- HMP Swansea: 3% (3% gross)

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

Improvements in assessment scores by prison:

Prison	Initial assessment score	Post support assessment score	Award achieved
HMP Cardiff	38%	80%	Gold
HMP Hewell	26%	68%	Silver
HMP Littlehey	23%	57%	Silver
HMP Swansea	40%	77%	Gold
HMP Usk & Prescoed	33%	64%	Silver

**EVIDENCE OF SUCCESS**

In order to make this level of progress, different departments within each prison were required to work together an institution-wide ethos of energy-saving achieved. This is not easy when you consider the size of the establishments involved.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- Current priorities of the prison service will determine the amount of time and dedication given to the scheme.
- Support of the prison service at a strategic level is key as is support from senior management within each prison.

**TIME REQUIRED TO COMPLETE THE BP**

2-3 years

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

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**TYPE OF ORGANISATION**

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**WEBSITE**

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REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Save@Work

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

Gloucestershire, UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty

### DESCRIPTION OF THE PRACTICE

Save@Work is an EU funded project which is taking place across 9 partner countries. The project is designed to help the public sector lead by example and reduce the energy consumption of their own buildings by running a year-long energy saving campaign amongst their staff. The staff are provided with the support and tools needed to run an energy saving initiative amongst their colleagues by making small changes to their everyday workplace energy consuming behaviours.

The project started with the formation of an energy team in each participating building. This team were then given the support needed to carry out an energy audit and then attended an energy training session. Following this training session the team drew up an action plan of what changes they were going to implement in the building and how they were going to carry them out.

To help provide a feedback mechanism, an online calculation tool was developed into which the team would add their monthly electricity and gas meter readings – this would show whether they were using more or less energy than in previous years.

To increase the gamification of the project, each building was in competition with the others to win a prize in one of three categories:

- Greatest energy savings
- Best action plan
- Most innovative campaign

This project works best with large office-based organisations, preferably where staff know each other; this makes the competition element of the project more fun and is likely to have higher engagement and ultimately better results.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- **No of households engaged in support programmes:** 15 Sustainability Champions were directly trained in tariff switching and saving energy in the home. These champions then trained the staff in their buildings, amounting to 3985 people. Assuming an application of 82% (based on the proportion of teachers applying their training at home from the YEP! project (another BP example)), an **estimated 3188 households** will have been engaged.
- (%) Reduction of annual primary energy consumption in public buildings. Some of the buildings are making substantial energy savings of around 10%.
- (kWh) Annual energy savings in households.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

This is a European initiative with 9 participating countries. Collectively we are looking at running the competition in 180 buildings, with 9000 employees, saving 3,100 tonnes of CO<sub>2</sub>.

From a UK perspective we started the project with 16 buildings taking part but by the end of the competition this had dropped to 14. The data from the energy saving competition hasn't yet been gathered but we will provide an £800 prize to the building that has made the greatest energy savings as well as the one that produced the most comprehensive and engaged action plan. The final £800 will also be offered to the building that runs the best energy saving campaign.

### EVIDENCE OF SUCCESS

Some of the buildings that have taken part in this project have really embraced it; it breathed life into a number of 'sustainability teams' that already exist within the Land Registry – the UK's biggest participating organisation (12 buildings). At this stage, the final results are not yet in but some of the buildings are making substantial energy savings of around 10% which is significant considering this is through behaviour change only. It has also encouraged a number of the employees to look at their energy saving practices and bills at home with a number of them turning to switching sites.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Because this project was part of a large European funded initiative there was a budget for 'incentives'. These ranged from thermometers to vouchers to chocolate. These initiatives were a fantastic way of engaging staff on the objectives of the project as well as providing them with the tools to help them identify areas of high energy usage. There are also prizes of £800 x 3 which in themselves are also incentives to engage and win. Whilst a number of staff were interested in the environmental objectives of this project, the largest percentage were not likely to be and therefore, running a behaviour change project without a budget for these incentives could be more challenging.

Another barrier to this project is motivation, this project has been aimed solely at the public sector which in a number of participating countries is under very real fiscal strain, therefore, whilst the management are often keen to find ways of saving money, morale amongst staff is often low.

#### TIME REQUIRED TO COMPLETE THE BP

2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**TYPE OF ORGANISATION**  
Private SME and not-for-profit sustainable energy education charity

**WEBSITE**  
[www.saveatwork.org.uk](http://www.saveatwork.org.uk)



REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Link to Energy

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

Gloucestershire, UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- Innovation

### DESCRIPTION OF THE PRACTICE

Severn Wye Energy Agency initially set up a local network of installers in 2007 recognising the need for a more holistic approach in delivering project funded energy efficiency improvements to householders, businesses and communities in the region, so as to ensure the maximum take up of installed measures. In 2011 this network of 'Link to Energy' installers were made more readily available to the public with the setting up of a new, user friendly website [www.linktoenergy.org.uk](http://www.linktoenergy.org.uk)

Improvements and adaptations were made to the website in 2013 as part of the **'Countdown to Low Carbon homes'** European project and again in 2015 to ensure that it was up to date with current website design and capability requirements.

As of January 2017, The Link to Energy website has 122 registered installer members and 15 supply chain members. This will increase in line with secured funding to increase our support to SMEs through our European Structural Investment funded Target 2020 programme.

Registered installer members are able to offer a full range of energy efficiency and renewable energy improvement measures to domestic, business and communities across Gloucestershire and South Gloucestershire. This includes everything from loft and cavity wall insulation to external insulation, gas boilers, heat pumps, solar panels and cooling systems for businesses.

Supply chain members typically offer self-installed measures such as LED lighting and chimney balloons. It is also possible to view and order technologies such as solar batteries and heat batteries.

Of the 137 members, the vast majority are based within Gloucestershire and South Gloucestershire. Each Local Authority area within Gloucestershire has installer or supplier members represented, ensuring that Local economies are benefitting from improvements being made to homes and businesses.

The vast majority of Link to Energy members are SMEs with a small number of larger companies offering services in the area. These members are typically included to ensure that householders are able to access funding schemes such as the **Energy Company Obligation (ECO)**.

The Link to Energy website includes functionality that allows users to locate installers local to them. A postcode area or location can be entered providing a list of installers, the closest to them being at the top of the list. These results can be filtered by technology or measures and a contact form with the customer details and requests can then be sent to one or more of the recommended installers simultaneously. This generates an email to the installer and the project manager who then follows up with the installer or the client as to the outcome. Automated reminders are sent to both the installer and the client if the installer hasn't been in touch within the agreed three working days.

The Link to Energy website includes information pages and installer searches specific to businesses and community groups. This allows these organisations to locate and contact only those installers that can service their requirements. Case studies of local businesses that have made energy improvements can also be read or downloaded.

The domestic section of the Link to Energy website incorporates additional information including advice pages on:

- Installer accreditations
- Finding the finance
- Home energy assessments
- Home energy improvements
- Over 50 local case studies of homes that have made energy efficiency improvements
- Information and links to the Warm & Well scheme

The Link to Energy site also includes functionality that allows Severn Wye Energy Agency to report on the following:

- The number of enquiries sent by Local Authority area
- The total number of installations completed by Local Authority area
- Site visitor statistics and analytics
- The value of work completed by Local Authority area
- The numbers of technologies and measures that users are requesting quotes for

Regular networking and information events are provided to support all registered Link to Energy installers. These are held quarterly, though additional events have also been included when new incentives or funding schemes have dictated that more information would be useful to local installers, the launch of the Green Deal for example. Speakers and topics discussed at installer events have included:

- Updates on projects of interest from Severn Wye Energy staff.
- Installer members promoting their own products and services.
- External speakers covering areas of interest to local installers.

Speakers have included representatives from:

- The Federation of Master Builders.
- Local Authority staff.
- Insulation and heating product manufacturers.
- Sector skills body – construction skills.
- South Gloucestershire and Stroud (SGS) College.

Several funded training sessions for local installers have also been held in the region. This has included:

- External wall insulation manufacturer training.
- Internal wall insulation manufacturer training.
- ‘Winning the Contract’ understanding public sector procurement for SMEs.

Installers are in regular contact with the scheme manager via email, telephone and during face-to-face meetings to ensure customer referrals are managed well and to pass on information relating to local, regional and national updates that may be of interest or relevance.

The Link to Energy website includes a section dedicated to installer members that incorporates the following:

- An overview page for potential new installers and suppliers to learn more about the service.
- A news and events page.
- Useful information – this includes information specific to installers.
- A document library.
- A Link to Energy Twitter feed.

Future Link to Energy Service developments aim to include the following:

- A quarterly installer newsletter distributed to all members.
- Research to understand the training requirements of local installers and to ensure that relevant and required courses are made available in the region.
- The Development of existing relationships with bodies such as SGS College, the Federation of Master Builders and the sector skills councils to allow delivery of courses.

The existing Link to Energy installer network database allows domestic, business and community customers to obtain quotations from installer members, and ultimately have improvement measures installed. The database incorporates an automated system that allows **Warm & Well** to determine the value of completed work and to request a referral fee from the installer where a lead has provided work to them. This referral fee has historically been set at 3% (+VAT) of the total value of the work completed. This rate allowed us to draw a small income whilst not penalising the installer. This avoids significant additional costs being passed onto the client.

The online installer database incorporates a number of reporting facilities that allow Severn Wye to report on completed job and referral fee values across the individual local authority areas, or for the region as a whole. These can also be broken down by domestic, business or community work.

**Note:** Links to other examples of good practice are shown in **bold letters**

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- **Number of households engaged in support programmes: Link to Energy Installers have supported 353 households** as direct referrals from Severn Wye Energy Agency between April 2013 and April 2017. The value of these installations amounts to £1,333,297.40.
- Number of households with improved energy consumption classification
- (kWh) Annual energy savings in households
- Number of households with improved energy consumption classification

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Since 2013 over 1200 householders, businesses and community groups have used Link to Energy sending over 3000 enquiries to installer members.

**Direct referrals from Severn Wye Energy Agency between April 2013 and April 2017 resulted in Link to Energy Installers supporting 353 households.** The value of these installations amounts to £1,333,297.40.

#### EVIDENCE OF SUCCESS

In 2012, Link to Energy was selected as an exemplar service by the ‘Green Skills Alliance’ (made up of the UK Sector Skills Councils) for developing best practice around skills, training and innovation for the low carbon audience. A report was produced in 2014 detailing the Service provided at that time.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- The time and finance required to design and launch an online portal that allows customers in a specific area to find and contact appropriate local accredited installers
- The ongoing required management of the service to ensure the success of relationships made between installers and customers
- The ongoing promotion of the site to ensure the service presence in the area it serves

#### TIME REQUIRED TO COMPLETE THE BP

1 Year

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**WEBSITE**  
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REGION GLOUCESTERSHIRE, UK



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**SustainCo (Sustainable Energy for Rural Communities)**

**PARTNER REGION**

Gloucestershire, UK

**LOCATION DATA**

- Liaison Committee for Sustainable Energy, *France*
- (GERES) Groupe Energies Renouvelables, Environment et Solidarites, *France*
- Severn Wye Energy Agency, *Gloucestershire, UK*
- Caritasverband (CARITAS), *Frankfurt, Germany*
- Focus Association for Sustainable Development, *Slovenia*
- Energy Agency of Plovdiv (EAP), *Bulgaria*
- Institute de l'Ecologie en Milieu Urbain (IDEMU), *France*

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector
- Innovation
- New Financial Instruments (Cost Optimisation)

**DESCRIPTION OF THE PRACTICE**

SustainCo supported the European vision for the energy performance of buildings, that by 2020 all new buildings should be nearly Zero Energy Buildings (nZEB) The SustainCo project aims to raise awareness of, and support development of, low energy building projects, with special emphasis on rural areas.

SustainCo aims to increase the visibility of both new-build and renovation, with the aim of capacity and confidence building in the public sector. Activities included:

- Development of Toolkits which focus on technical and financial aspects of nZEB in relation to energy efficiency and renewable energy usage.
- Promotion of nZEB case studies.
- Capacity building for energy professionals - development and hosting of a capacity building event and training for project developers including conferences, seminars, training and site visits.
- Support of nZEB Pilot Projects.
- Supporting Covenant of Mayors signatories in rural areas.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- **Number of households engaged in support programmes: 1278.** 1274 households had support from the enquiry service. 4 households were used as domestic case studies and received energy advice and support.
- **Number of households with improved energy consumption classification: 96.** Up to 96 buildings only in UK were

renovated and improved their energy consumption classification.

- (%) Reduction of annual primary energy consumption in public and domestic buildings
- Capacity building for energy professionals

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

The SUSTAINCO web-based technical and financial toolkits were developed to serve as guide on how to achieve nZEB standard in retrofit or new-build houses.

Severn Wye produced five detailed case studies on nZEB buildings.

In the UK, Severn Wye led three training events, one capacity building conference, and two workshops with study tours to nZEBs. These events built knowledge and capacity in relevant target groups (developers, architects, planners, etc.) on current and upcoming nZEB standards.

During the lifetime of the project Severn Wye's SustainCo Advice Team facilitated more than 1300 enquiries with respect to advice on nZEBs

**EVIDENCE OF SUCCESS**

Of the participants who attended events run by SustainCo, 94% were satisfied with the overall quality. 72% of participants were likely to change their current working practices.

Average overall results of Case Studies in the project- households:

- Investment cost: 1 226 €/m2
- Primary energy need: 76,5 kWh/m2/a
- Annually Heat Demand: 15 kWh/m2/a
- Investment cost of RES: 124 €/m2

- Annual RES generation: 63 000 kWh/a (86% coverage Primary energy need)

Average overall results of Case Studies in the project – public buildings:

- Investment cost: 1 277 €/m2
- Primary energy need: 127 kWh/m2/a
- Annually Heat Demand: 41 kWh/m2/a
- Investment cost of RES: 82 €/m2
- Annual RES generation: 49 000 kWh/a (16% coverage Primary energy need)

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

Not all countries had a definition of what an nZEB is. It was important to research current government position and for the purpose of project we had to propose a definition for the UK.

**TIME REQUIRED TO COMPLETE THE BP**

36 Months

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

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**TYPE OF ORGANISATION**  
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**WEBSITE**  
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**FICHE COMPLETED ON DATE**

09/03/2017



REGION GLOUCESTERSHIRE, UK

**G10**

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Your Green Future (YGF)

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

South West and Midlands, UK

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- Innovation

### DESCRIPTION OF THE PRACTICE

- *Education of young people and inspiring them to pursue jobs in the green sector, including jobs in construction and installation.*

Your Green Future is a 2-day sustainability event aimed at engaging secondary school students (aged 11-18) on the role of sustainability in innovation, retail, energy, construction and waste and how their careers in the future might help to develop a low carbon future.

The UK low carbon economy is growing at 7% a year and this continued growth sees new skills needed at all levels. Yet businesses say they do not have the skills to meet growth, notably critical Science Technology Engineering & Maths skills (predicted shortfall of 50% by 2020 - Institution of Mechanical Engineers). To address these challenges it is vital that young people entering work are able to play their part. They need to be informed of the opportunities that are open to them, and given the necessary support to gain the appropriate qualifications and skills. This is not currently being achieved. For instance in 2015 we surveyed 669 young people from across the South West & Midlands and only 30% knew what a low carbon economy was and few could identify industries that have a link to its development.

Enhancing young people's prospects, including providing them with a clear view on the current job market and training opportunities, will also help prevent youth unemployment - in 2015 young people are nearly three times more likely to be unemployed than the rest of the population and our survey of 669 young people found that 85% would like to speak to more people about job opportunities.

These challenges were a call to action and our response was 'Your Green Future', which was developed in 2010 by a consortium of organisations, including Severn Wye Energy Agency, Rotary and InterClimate Network, who were overseen and driven by John Davidson OBE. In 2012 *Severn Wye Energy Agency* became the lead partner, in order to further develop existing approaches and deliver events throughout the UK.

Each event involves up to 500 secondary school students working with over 30 businesses as together they tackle sustainability in a series of fun, interactive workshops. Each day usually includes:

- A key note speech
- Workshops
- An interactive exhibition hall where students have a focused activity which involves speaking to organisations.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- **Number of households engaged in support programmes:** 3611 students have been involved in Your Green Future. Using the 90% mean of the proportion of students and teachers making changes to their energy behaviours in the Young Energy People! Project (another Best Practice example), it is anticipated that **3250 households** would have been engaged.
- Education – a better understanding of how integrated sustainability already is within business and what the needs are in the future to help create a low-carbon economy. There may be an indirect impact on energy behaviours at home following some activities at the event.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The West of England and Solihull YGF events have become a permanent feature of both the local authorities and local secondary schools calendars. They are incredibly well received and popular with many of the businesses who support the event as a way of engaging with the next generation of employees and an opportunity to promote their organisation in their local area.

A key element of each event is the pre and post event surveys which are given to each student. Prior to the event we ask the students which industries they think are involved in a sustainable economy to which they often answer energy and engineering but when we ask these questions after the event the results are very different, they still understand the importance of energy and engineering but they also appreciate its role in retail, construction, waste and land management.

A number of businesses use the event to fulfil their Corporate Social Responsibility objectives and send their graduates to it as a training exercise; however, we are looking at working with the University of the West of England to provide attending mentors with a qualification along the lines of communicating science.

#### EVIDENCE OF SUCCESS

Severn Wye Energy Agency has held:

- 13 events.
- Over 130 schools have attended the events.
- Over 3000 students aged between 12-18.
- Over 270 Businesses have supported the events.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

These are expensive events to fund\*, often in the region of £25,000; however, if funding was available then the event is readily transferrable as long as there are sufficient schools and businesses local to the event.

\*Funding for the UK events comes from a wide variety of funders including the national lottery, local authorities, the rotary club and private sponsorship.

#### TIME REQUIRED TO COMPLETE THE BP

4-6 months per event

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

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##### ORGANIZATION

Severn Wye Energy Agency

##### TYPE OF ORGANISATION

Private SME and not-for-profit sustainable energy education charity

##### WEBSITE

www.yourgreenfuture.org.uk



REGION GLOUCESTERSHIRE, UK



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Countdown to Low Carbon Homes

### PARTNER REGION

Gloucestershire, UK (worked with Cyprus and Greece)

### LOCATION DATA

UK- Stroud District Council, Forest of Dean District Council, Wiltshire Council, and South Gloucestershire Council

*Cyprus- as a relatively small country, the focus area was the whole country rather than one town or city*

*Greece- The focus area was Thessaloniki in Northern Greece*

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Innovation
- New financial instruments

### DESCRIPTION OF THE PRACTICE

- Eliminating administrative barriers

### Overview

Running from January 2012 to December 2014, Countdown to Low Carbon homes was an action research project. Its aims were to research, develop and communicate an integrated practical delivery approach to community-scale sustainable energy retrofit of homes, focusing on delivery by small to medium enterprises (SMEs).

By exploring the whole ‘retrofit journey’ from planning stage to implementation and post installation energy use, the Countdown to Low Carbon Homes project aimed to find ways to make domestic retrofit easier and more mainstream, in ways that benefit local businesses. To do this, the project partners worked with households, installers and other key decision makers involved in domestic retrofit in their communities to gather evidence on the situation at a local level.

### Funding and set up

Countdown to Low Carbon Homes was funded by the **ERA-Net Eracobuild programme**. ERA-Net Eracobuild is a network of national R&D programmes focusing on construction and the sustainable built environment, with the aim of developing synergies between national programmes by sharing strategies and establishing joint programmes and projects.

Countdown to Low Carbon Homes was funded under the Sustainable Renovation theme, addressing the challenge of sustainable renovation of the existing built environment, and providing opportunities for industries, research, academic and other organisations to take part in multilateral cooperation in this field.

### Key areas of work

#### 1. Research

To better understand the whole ‘retrofit journey’ from planning stage to implementation and beyond, the research teams in Greece, Cyprus and the UK recruited and worked with households, installers and other key actors involved with the sustainable energy retrofit of homes. Action learning techniques were used in a variety of ways to work with key actors, record the results and use these to refine processes and support activities.

#### 2. Installer Network

A local installer group for energy improvements to buildings had been established in partnership with Stroud District Council in 2007, to build local capacity for the measures that were less common in the UK at the time such as micro-renewables, solid wall insulation and high efficiency windows suitable for traditional buildings, and as a means for homeowners to find installers in the local area. Members were included on a list that was made available to homeowners and meetings were held to share knowledge and discuss industry developments. This network was further developed as part of the Countdown to Low Carbon Homes project, and branded **‘Link to Energy’**.

#### 3. Local loans pilot

As part of the delivery model Severn Wye developed and piloted a loan scheme offering households alternative sources of finance for their improvements. Severn Wye enlisted the expertise of Hungarian consultancy GESB to help develop the loan product, with the aim of adapting the approach they had used successfully in Hungary-the Revolving Retrofit Guarantee Fund - to the UK owner-occupier market. By June 2014, both local pilots in Stroud District and South Gloucestershire were underway.

#### 4. Community scale delivery of home energy improvements

A guide to community scale delivery of home energy improvements was set up, to support organisations aiming to implement a community scale delivery model. In developing this model, Severn Wye aimed to ensure that homeowners would be supported through the whole retrofit journey, from awareness raising and outreach to develop interest, through advice and assessments, sourcing installers and finance, and post retrofit user behaviour. This involved developing appropriate support processes at each stage of the journey and ensuring the right systems and procedures were in place.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households engaged in support programmes: 52 households were engaged in action research

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

There are three outputs from this project:

- a research report which captures the work with households, installers and other key actors at local level
- a set of case studies charting the journeys of households in Cyprus, Greece and the UK that made energy improvements to their homes
- a guidance toolkit for community scale delivery of home energy improvements

These are available at: <http://www.countdown-tolowcarbonhomes.eu/index.php/gb/>

By June 2014, both local pilots to deliver the local loan projects in Stroud District and South Gloucestershire were underway.

#### EVIDENCE OF SUCCESS

##### 1. Research

The research report captures the work with households, installers and other key actors at local level. Its conclusions include reasons, triggers and obstacles for considering retrofit alongside other results. This can be used by other organisations to guide their projects and inform ways of working.

##### 2. Installer network

The installer network was further developed, and has since been used to facilitate grant funding programmes.

##### 3. Local loan pilot

By June 2014, both local pilots in Stroud District and South Gloucestershire were underway. A significant amount of learning came from setting up these projects, including the legislation surrounding these projects. The learning from this is included in the guide to delivering community scale retrofit.

##### 4. Community scale delivery of home energy improvements

The outputs provide information and guidance for other organisations setting up community scale delivery of home energy improvements. The key aim of this was to ensure the organisations are aware of the main points that need to be considered to set up a project, including barriers and administration (areas addressed include: reaching homeowners, energy advice, technologies, installers, regulations, finance mechanisms and monitoring and evaluation).

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

**For organisations looking to set up a project to deliver retrofit projects:** the research report and guide provides information. It isn't a comprehensive guide but should be a useful starting point. Each section in the guide provides information on barriers that could hamper the set-up of a project. The research report and guide were written with the experience from three countries, but there could be additional/different barriers in other countries.

**For organisations looking to create a similar project to Countdown to Low Carbon homes:** a key challenge was locating and working with the householders. There was not any additional funding for the householders through the scheme, and as such they gave their time and information freely without a key incentive. They were required to give detailed information (including energy use) and therefore there was an administrative burden for them. This was also replicated in the work with other stakeholders, as they were asked for their time and expertise without any identifiable benefits for them. The organisation setting up the project would also need to ensure they have detailed knowledge and experience in the area of energy efficiency, in order to set up detailed project outputs and provide information.

#### TIME REQUIRED TO COMPLETE THE BP

2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

Severn Wye Energy Agency

##### TYPE OF ORGANISATION

Private SME and not-for-profit sustainable energy education charity

##### WEBSITE

[www.countdowntolowcarbonhomes.eu](http://www.countdowntolowcarbonhomes.eu)

<http://www.severnwyne.org.uk/en/news/archive/article/countdown-to-low-carbon-homes-research-report-and-toolkit-launched.html>

#### FICHE COMPLETED ON DATE

08.03.17



REGION GLOUCESTERSHIRE, UK

G12

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Young Energy People

### PARTNER REGION

Gloucestershire, UK

### LOCATION DATA

Gloucestershire, Wiltshire and Wales (UK)

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector

### DESCRIPTION OF THE PRACTICE

Young Energy People is a sustainable energy project aimed at students in secondary schools (aged 11-18 years). It aims to educate these students in energy management and renewable energy technologies whilst also helping their schools to become more efficient in their energy use. In this way, it helps to prepare student for potential employment with the ever expanding 'green economy' whilst improving the sustainability of their school's operations. As an added benefit, students also develop a range of transferable skills including employability skills.

A student 'School Energy Management Team' (SEMT) is recruited in each school via an application and interview process (developing key employability skills). This team of students receive training in energy management and renewable energy technologies before going on to carry out a survey of their school buildings.

Following the survey, they develop a report containing their findings and an action plan for improving the energy efficiency and sustainability of their school. These findings and action plans are presented to school governors and senior leadership teams where elements are amalgamated into the school's development plans.

This is followed by an energy campaign led by the SEMT aimed at encouraging positive behaviour change towards reducing energy use.

Students are then provided with opportunities to apply the knowledge and skills they have developed to a work context as part of their planned work placements. During these placements, they repeat the energy survey for the work premises where they are based and report their findings and action plan back to the business concerned.

The programme originated as a pilot project utilising funding through the 'Intelligent Energy Europe' programme. Since then it has been funded locally through Local Authority funding.

A total of 31 secondary schools have completed the programme across Gloucestershire, Wiltshire and Wales.

The project was awarded an Ashden Award for Sustainable Energy in 2011.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households engaged in support programmes: At least 92

**Of those directly involved in the project, 82% of teachers and 98% of students indicated that their behaviour had become more energy conscious as a result of taking part in the project. This amounts to an impact on at least 92 households.**

To date, the project has engaged approximately 25,000 school students with a knock-on effect into these student's homes.

- (%) Reduction of annual primary energy consumption in public buildings

On average schools reduced their annual energy consumption by 22.7%.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- On average schools reduced their carbon emissions by 22.5%
- The 29 Gloucestershire schools reduced their energy bills by an average of 12.7%\*, reducing their annual energy bills by a total of £158,000. This is an average saving of £5,448 per school.
- Note: There was a steep increase in the unit cost of both gas and electricity during this period.
- 100% of students enjoyed taking part in the project.
- 100% of teachers and 87% of students felt that the project had been a success in their school.
- 82% of teachers and 98% of students indicated that their behaviour had become more energy conscious as a result of taking part in the project.
- 84% of students felt that their teamwork skills had improved as a result of taking part in the project.

### EVIDENCE OF SUCCESS

The YEP project was awarded an Ashden Award for Sustainable Energy in 2011. (See <https://www.ashden.org/winners/swea11> for further details.)

The project also received excellent feedback from both students, staff, school governors and participating businesses:

## Feedback from Teachers

*'Farmor's school is committed to environmental issues and the YEP! project is ideal to enhance this. The project offers practical benefits that students can feel a part of to help reduce energy waste and costs to the school plus the environment at large. The students who are taking part are learning lots of useful skills that extend beyond the YEP! project such as public speaking, interview skills, team working and research skills. For Farmor's school the intention is that in the near future the YEP project becomes part of a multi-agency approach to environmental issues that affect our school and the wider community.'*

Simon Ditchfield,  
Teacher & YEP! Project Coordinator, Farmor's School

*'I would say that Y.E.P! has been an excellent opportunity for my students to get involved in. The support from Severn Wye Energy Agency, has been excellent in planning and providing me with the resources and support that is needed. The benefits from the project will have a big impact on the school in terms of more positive behaviour towards using energy and hopefully saving money.'*

Miss McKinley,  
Geography & Year 10 tutor, Severn Vale School

*'Many thanks for all your help, you have been the driving force behind the group, doing wonders for their self-esteem, sense of achievement and developing their professional skills.'*

Neil Williams,  
Geography Department, Archway School

*'The presentation to the governors went very well; the students were fantastic. They asked could they dress as 'business people' so they came all dressed up. Although they were very nervous they had practised several lunchtimes this week and came across so well, especially as there were about 20 adults there. They handled the questions really well and I've had lots of positive comments about their presentation. YEP! now has a strong reputation with the governors.'*

Simon Ditchfield,  
Teacher & YEP! Project Coordinator, Farmor's School

*'The presentation went well – stimulated lots of questions from SLT and a desire to act on our report. They are now keen for the group to start on the next stage of getting the school involved.'*

Chris Reynolds,  
Teacher & YEP! Project Coordinator, The Crypt School

*'The head was VERY impressed with the YEP! team's presentation. "*

Mrs R Weiss,  
Teacher & YEP! Project Coordinator, Maidenhill School

*'The support received from Severn Wye Energy Agency has been fantastic. The resources are brilliant and have been improved since the first pilot project. It has also promoted interschool sharing. It is fantastic having the support at the end of an email, and regular meetings at school to help keep the campaigning on track.'*

Julie Parsons,  
Teacher & YEP! Project Coordinator, Chosen Hill School

## Feedback from Senior Leadership

*'Having students involved from the outset has been brilliant – the core YEP! Team are still just as keen and happy to now oversee further implementation of our energy awareness plan.'*

Beth Warren, Deputy Head Teacher, Bournside School

## Feedback from Governors

*'...at Wednesday's Premises Committee meeting we had a superb presentation by a group of students all about the fantastic survey they had completed of the school's energy use and potential for cutting down consumption, as part of your fab YEP! programme! It was a brilliant piece of work (supported wonderfully by your education officer – sorry, I didn't get his name) and the report is being taken very seriously, with many of the 'quick win' suggestions to reduce energy consumption being taken on board as soon as possible.'*

Beth Whittaker, Governor, Archway School

## Feedback from Business

*'The audit and review the YEP! students and Severn Wye Energy Agency carried out has really opened my eyes and I believe once I present to the General Manager, and hopefully the CEO, it will show them a dual role, business development /cost saving possibility that they will not be able to ignore. The knock on from this is the environmental impact reduction that comes with these measures which as a bonus is fantastic and I believe that this might carry almost as much weight with the company as the cost savings when all is said and done.'*

Hotel Manager, The Four Pillars Hotel.

## FACTORS THAT MIGHT HAMPER THE TRANSFER

*Please indicate problems or barriers that could appear when transferring the good practice to other partner.*

The level of success to a great extent depends on:

1. The degree to which the project activities can be incorporated into the existing curriculum.
2. The amount of time that teachers are able to dedicate to the project (we found a lack of teacher time to be a barrier in some instances).
3. The level of support from school senior managers.
4. The presence (or otherwise) of a keen member of staff.

## TIME REQUIRED TO COMPLETE THE BP

18 months (6 months preparation; 12 months delivery)

## CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

### CONTACT NAME

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### ORGANIZATION

Severn Wye Energy Agency

### TYPE OF ORGANISATION

Private SME and not-for-profit sustainable energy education charity

### WEBSITE

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## FICHE COMPLETED ON DATE

03.03.17



— GOOD PRACTICES FOR REGION

# PODKARPACKIE REGION



**PODKARPACKIE REGION**



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Expansion of energy infrastructure at the Higher School of Law and Public Administration using renewable sources of energy**

**PARTNER REGION**

Podkarpackie Region (Poland)

**LOCATION DATA**

Rzeszów

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Innovation

**DESCRIPTION OF THE PRACTICE**

Innovative installation of photovoltaic cells installed at the campus of the Higher School of Law and Public Administration in Rzeszów. It is one of the largest facilities of heat pumps and photovoltaic cells in Poland.

**Objective**

The aim of the investment was the acquisition of electricity with a capacity of 150 kWp from solar energy using silicon technology (back-contract). The aim of the investment was also the construction of base stations for charging electric cars. The aim of the project was also to develop a functional program of retrofitting heat pump system with the possibility of passive - active cooling of selected rooms of the Higher School and the use of waste heat air for the regeneration of brine heat pump.

The solutions, that have been applied in the Higher School of Law and Public Administration, are based on two renewable energy sources:

- The first, is the heat gained from the ground, from a depth of over 125 meters (30 wells) where specialized probes, connected to the pump, absorb the heat from the ground. The thermal energy for heating the building is taken from the ground by a system of thirty vertical borehole heat exchangers with a length of 125 meters deployed in the area surrounding the property. The existing pump system was modified and equipped with a system of passive-active cooling lecture halls. In addition, waste heat from air conditioners is used for the regeneration of heat source heat pump.

- The second is the processing of solar energy to power low voltage. In total, photovoltaic panels cover an area of about 1200 square meters.

Important element of this project is the first stations for charging electric cars in Rzeszów.

The most important part of the investment is the installation of innovative photovoltaic cells. There are almost 40 car ports, which were constructed at Higher School's main car park. These are special shelters, which are equipped with modern photovoltaic panels covering the area of about 840 square meters. Thanks to this there can be obtained electricity with a capacity of approximately 170 kW.

Stations for charging electric cars allow simultaneous charging of 4 vehicles.

The Higher School installed weather station measuring solar radiation, wind speed and air temperature, which main task is to optimize the activities of solar inverters. Optimization is to improve the MPPT (Maximum Power Point Tracking).

The Higher School is powered by the local transformer station. The greatest demand for electric energy arises from the air-conditioning and ventilation in summer, when sunshine is the highest. Panel system reduces the need for power from the grid thus relieving it.

**Financial resources: ~ 1.500.000 Euro**

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labeling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 1
- (%) Reduction of annual primary energy consumption in public buildings
- (kWh) Annual energy savings in households
- Number of households with improved energy consumption classification: 1

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- Nominal power obtained from photovoltaic system: 150 kWp. Annually, this allows to obtain energy of 132 MWh
- Estimated losses caused by temperature changes: 3.2% (in relation to the average local temperature)
- The total losses of the photovoltaic system: 18.0%

#### EVIDENCE OF SUCCESS

- Thanks to the technology, the Higher School of Law and Public Administration sets a new direction in ecology. According to calculations, the Higher School's own contribution in the installation will be paid back in 5 years.
- Lowering the cost of maintaining the buildings will at the same time lower the cost of studying at the Higher School (saving money in lighting the building and rooms and running air conditioning system).
- Extensive system of heat pumps and photovoltaic panels will also reduce the emission of pollutants into the atmosphere.
- The project will also contribute to the promotion of innovative technologies.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Barriers and differences in legal systems and regulations between countries and regions.
- Climatic differences, different weather conditions, geological differences between countries and regions.
- Different labor and investment costs in different countries and regions.
- Longer process of building or binding materials in various countries and regions (climatic differences or law regulations).

#### TIME REQUIRED TO COMPLETE THE BP

2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

**CONTACT NAME**

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**ORGANIZATION**

Higher School of Law and Public Administration

**TYPE OF ORGANISATION**

private

**WEBSITE**

www.wspia.eu



PODKARPACKIE REGION



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Comprehensive use of renewable energy sources in the Community Center Association "Emmaus-Rzeszów"**

**PARTNER REGION**

Podkarpackie Region (Poland)

**LOCATION DATA**

Przedmieście Czudeckie

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Innovation

**DESCRIPTION OF THE PRACTICE**

This is the Centre for 25 homeless and unemployed people constructed by Association "Emmaus" in the period from 13.11.2013-31.12.2014 – it is a collective residential building with a workshop.

Within the Centre for Community, residents were given a chance to work. Association "Emmaus" prepared for these workshops: joinery, upholstery, recycling, tailor and electronics.

Now in these workshops, among others, homeless and unemployed may repair furniture, appliances and other items collected during rebounds and passed by the local residents. After the repair, the items are sold - and the profits from the sale support the budget of the Association "Emmaus".

**Financial resources: ~500.000 Euro**

During the construction of the Community Center complex they used RES (Renewable Energy Sources), including:

- Photovoltaic power installation of 17kWp allows for the production of electricity.
- Installation of central heating, underfloor heating and hot water-based ground source heat pumps with a capacity of 50 kW coupled with a system of solar panels with a capacity of 24 kW.
- Lighting of car parks and alleys using hybrid lamps and street lights, in LED frames, powered by photovoltaic batteries.
- Modification of the ventilation system of the building (with the use of ventilation with recuperation) with heat recovery which allows to reduce losses by about 50 to 60%.

- Installing the rainwater harvesting system for domestic purposes.
- Remote supervision of the building's installations.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labelling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 1
- (%) Reduction of annual primary energy consumption in public buildings: 70%
- (kWh) Annual energy savings in households
- Number of households with improved energy consumption classification: 1

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- The building is energy self-sufficient in about 70%, which generate savings which are used for financing statutory activities,

**EVIDENCE OF SUCCESS**

- The building is energy self-sufficient in about 70%, which generate savings which are used for financing statutory activities,
- The building is an example of environmentally friendly building standard in the region,
- A positive impact on the local community and the image of Podkarpacie Region.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- Barriers and differences in legal systems and regulations between countries and regions.
- Climatic differences, different weather conditions, geological differences between countries and regions.
- Different labor and investments costs in different countries and regions.
- Longer process of building or binding materials in various countries and regions (climatic differences or law regulations).

**TIME REQUIRED TO COMPLETE THE BP**

+1 year

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

**CONTACT NAME**

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**ORGANIZATION**

Association "Emmaus-Rzeszów"

**TYPE OF ORGANISATION**

private

**WEBSITE**

www.emaus-rzeszow.pl



PODKARPACKIE REGION



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Podkarpackie Academy Certification

**PARTNER REGION**

Podkarpackie Region (Poland)

**LOCATION DATA**

Rzeszów

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

**General objective**

Improving the professional skills of people over 45 years-old with building qualifications: architectural, construction and installation.

**Detailed objectives**

- Updating knowledge about thermal energy buildings to 195 people with building qualifications enabling them to issue energy performance certificates of buildings;
- learning support program used for preparing building energy certification for 195 enabling them to issue energy performance certificates of buildings;
- promoting active professional attitude focused on personal development.

**Target group** people over 45 years-old with building qualifications: architectural, construction and installation. It is a good example connected with experts and their awareness concerning need for additional education and improving their qualifications.

**Project activities** series of training courses for 195 beneficiaries over 45 years old in order to help them to get energy performance certificates of buildings;

1. Training: Preparation of energy performance certificates. The training discusses the methodology of the certificates together with exercises in order to improve practical skills. Training was adapted to the situation of people over 45 years old holding a building license. The need to organize training courses in this field stemmed from the analysis of requests for specific knowledge and skills in the region. Classes were conducted in a way which did not interfere with day-to-day professional work – during the weekends. The training consisted of 32 hours of theoretical and practical classes (4 days x 8 hours). Program of training: Legal basis; Evaluation of the thermal protection of the building; RES; the methodology of calculation; Execution of training energy certificates; The use and operation of the thermal imaging camera.

2. Training: Support for the drawing up of energy certificates. Each course consisted of 16 hours of practical classes, organized in participants' free time (weekends). Program of training: The scope of the building's data; discussion of the program in terms of preparation; The choice of computing solutions; Defining partitions, zones and premises; Entering data of heating and lighting installations; Analysis of errors; Generating the final certificate; Implementation of energy certificates.

**Financial resources:** 150.000 Euro – finance from European Social Fund under Operational Program Human Capital 2007 – 2013 + own contribution of participants - 10% costs of training.

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- Number of certificates issued: 390
- Number of training courses: 26
- Number of trained participants over 45 years old: 195 (including 39 women)
- Working adults who completed the project: 195 (39 Women)
- Facilitating acquisition of new skills and qualifications for 195 people
- The standardization of qualifications for certification of 195 people

#### EVIDENCE OF SUCCESS

- Raising professional skills of 195 people over 45 years old with building qualifications: architectural, construction and installation;
- Updating knowledge about thermal energy buildings to 195 people with building qualifications enabling them to issue energy performance certificates of buildings;
- Learning support program used for preparing building energy certification for 195 enabling them to issue energy performance certificates of buildings;
- Promoting active professional attitude focused on personal development;
- Promotion of lifelong learning and continuous improvement of skills among 195 participants and among society;
- Being more competitive on the labor market in the construction sector in Podkarpackie Region;
- Prolonging the professional activity of people over 45 years of age who participated in the project;
- Increasing the chances of career advancement among people who completed trainings.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Lack of problems justifying the needs for this type of training in another region or country.
- Problems with the recruitment of the target group and its resignation during trainings.
- Problems with the source of funding for this kind of actions - the needs for adequate funding or the need to take fees from participants.

#### TIME REQUIRED TO COMPLETE THE BP

2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**ORGANIZATION**

Podkarpackie Energy Agency in Rzeszów

**TYPE OF ORGANISATION**

private

**WEBSITE**

www.pae.org.pl



## PODKARPACKIE REGION



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Podkarpackie Low-Energy Consumption Technologies Transfer Centre's Passive House

### PARTNER REGION

Podkarpackie Region (Poland)

### LOCATION DATA

Rzeszów

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- Innovation

### DESCRIPTION OF THE PRACTICE

Presented building, will serve as the new headquarters of Podkarpackie Regional Chamber of Civil Engineers, and will play an important role as **Podkarpackie Low-Energy Consumption Technologies Transfer Centre**.

Basic technical data: total net area of the building: 1,005.11 km<sup>m</sup>, cubic net area of 4100,6m<sup>3</sup>.

The energy performance of the building: The building was designed as a **standard passive house**:

1. expected energy consumption for heating: 15 kilowatt-hour / m<sup>2</sup> / year.
2. expected air tightness: n50 <0.3 exchange / h

One of the main objectives of this structure is to develop the business of the Chamber, focused on the distribution of equipment and renewable energy technologies and training, organization of conferences and workshops in the field of knowledge engineering and construction art.

Implementation of the Centre was launched in June 2016 by carrying out preparatory works, preparing the ground for further construction. The object will serve as office and exhibition. Documentation of the project was developed in a design office in Cracow with the active participation of the management of the Chamber. Apart from the typical function of serving the Chamber of Civil Engineers, there is an additional aim of promoting and educating in the field of energy-efficient building technologies and, therefore the level of the ground floor will be entirely intended for exhibition space and conference room.

Project activities in the field of architecture, determining the minimum energy demand, associated primarily with the desire to achieve:

- High compactness blocks, the lowest ratio of surface envelope (A) to the volume (V)
- High air tightness of the building envelope,
- High thermal insulation of all external walls,
- The correct orientation of windows: The preferred orientation is the south, providing the best lighting in winter and reduced overheating in summer. It is worth noting that the buildings most often overheat in the summer on the east side and the west, which results from the research of the angle of sunlight,
- Appropriate selection of the surface of window openings - the size of window openings should be chosen so as to ensure a favorable intensity of daylight at this altitude, in accord with some basic activities performed in a given room. For example, in energy-efficient office buildings there is no rational justification to design glazing reaching down to the floor.
- An effective system of external shading - movable awnings are installed at a significant distance from the glass set to ensure the widest gap ventilation.
- Optimized design of the building - suitable for use. In buildings used in a continuous manner, a reasonable choice is a heavy construction. This type of construction makes buildings slower to overheat during the summer and can be cooled at

night through the ventilation system, often with limited need for air conditioning.

An important and unique feature of the present object are applied bio-climatic solutions - including reused building materials and natural ventilation. The office on the first floor to a large extent has been designed with natural, non-fired clay blocks with the addition of sand. Other walls will be made of silicate blocks, plastered with lime plasters and light partition walls of plasterboard, plastered with clay plaster.

The above-mentioned materials, particularly brick clay, having a high ability to control the humidity in the room, which is especially important during the heating season. Unfired bricks are able, within two days to absorb 30 times more moisture than the fired ones. In addition, clay brick and silicate block materials have a high heat capacity and low radioactivity. For this reason, they can significantly affect the development of natural, healthy internal micro-climate. Noteworthy is the fact that for the production of unfired bricks there is required only a minimum amount of energy compared to other conventional building materials.

Another characteristic bio-climatic element is a skylight (centrally positioned above the main lobby), which in addition to its primary function will provide the possibility of natural ventilation and cooling. In addition, in the entrance hall has been placed high wall made of silicate bricks (white color) and clay blocks (green color), forming two-tone composition, referring to the aesthetics of external façades. In order to complement and underscore the project's approach, there has been designed a reception desk made from the beaten ground. The architecture of today is witnessing the formation of

a new category of buildings. These are objects that can be described as pro-energy buildings. Energy of implementation should be the result of the search for the optimal solution planning, respectful of the most important aspects of utility, aesthetic and energy.

It is worth noting that the final architectural form of the building, the selection of the deployment of photovoltaic cells and wind turbines, are an example of the fact that the utilization of renewable energy sources must not express itself only through thoughtless maximization of energy gain.

The methods of obtaining electricity from renewable energy sources:

- six wind turbines with a power of 2 kW each,
- three wind turbines with a power of 0,3 kW each,
- photovoltaic modules.

The duration of the project is approximately 12-15 months.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 0
- (%) Reduction of annual primary energy consumption in public buildings:
  - Estimated energy consumption for equipment ventilation and heating and

air conditioning is 21,700 kWh / year.

- Estimated energy consumption for household is 28,300 kWh / year.
- Estimated total balance of all the receivers installed in the facility is 50,000 kWh / year.
- (kWh) Annual energy savings in households: 0
- Number of households with improved energy consumption classification: 1

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

In order to balance the annual electricity consumed in relation to energy produced from renewable energy sources, there will be used the following solutions:

- The six wind turbines with a vertical axis of rotation: Aerocopter 450 with a capacity of 2 kW, installed on poles, in the parking lot (the use of the device will be able to produce 12,000 kWh / year)
- Three wind turbines with a vertical axis of rotation: Aerocopter 220 with a capacity of 0.3 kW, installed on poles on the roof (expected production of energy 1,400 kWh / year)
- Photovoltaic cells, designed on top of the building and on car park's roof, having a total power of 47 kW. All photovoltaic modules are made of monocrystalline silicon cells with a front metallization: Front-Contact.

#### EVIDENCE OF SUCCESS

- **VENTILATION:** The building is expected to use a distributed ventilation system consisting of six air handling units, giving the possibility of precise and economical control dependent on the conditions prevailing in the zone. Air handling units are equipped with cross and double cross heat exchangers, with efficiency of heat recovery of above 80%. Central support office and a conference room are provided with an adiabatic cooling. In addition, air handling unit serving the office is equipped with ground, air heat exchanger, which is an additional source of supplemental cooling.
- Energy self-sufficiency
- Estimated energy consumption for equipment ventilation and heating and air conditioning is 21,700 kWh / year.
- Estimated energy consumption for household is 28,300 kWh / year.
- Estimated total balance of all the receivers installed in the facility is 50,000 kWh / year.
- Passive, NZEB house.
- Annual energy consumption for heating - 15 kWh / m<sup>2</sup>.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The transfer of good practice would involve a series of legal actions, construction and investment: purchase of land, building design, selection of the contractor, the construction of the building and use of the building for public purposes.

Transfer of this practice would last several years.

#### TIME REQUIRED TO COMPLETE THE BP

2 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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## PODKARPACKIE REGION

# P5

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

**Rehabilitation of buildings and removal of asbestos**

### PARTNER REGION

Podkarpackie Region (Poland)

### LOCATION DATA

Podkarpackie Region; 2011-2015

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- New financial instruments

Poland was one of the countries where carcinogenic asbestos was widely used for many years.

It is estimated that from 1952 to 1997 1.75 million tonnes of raw asbestos were used in the manufacture of asbestos-containing products, and in industrial facilities. Some 90% of that quantity was chrysotile, imported mainly from the USSR, the remaining 10% was crocidolite and amosite imported from Africa.

The largest share of asbestos (some 65%, mostly chrysotile) was used for asbestos-cement products assigned for the construction industry (such as flat and corrugated roofing sheets and wall linings).

According to estimates, some 1.2 billion m<sup>2</sup> of these products still exist. Crocidolite was used mostly for the manufacture of pressure pipes, one of more than 1 500 asbestos-containing products.

In 2002 there was 15 million tons of inventoried asbestos in Poland. In addition, only 30 percent of asbestos containing products in Poland are thought to have been inventoried, meaning that it is uncertain as to where the asbestos is located.

Most of asbestos was used as roofing in private households. People do not always realise how serious the problem of asbestos is. On the other hand, even if they do they often do not have will funds to remove asbestos (as it requires special treatment and processing).

### Programme for Asbestos Abatement in Poland 2009-2032

In 2010 the Council of Ministers adopted the Resolution No. 39/2010 of the Council of Ministers of 15 March 2010 on "Programme for Asbestos Abatement in Poland 2009 - 2032" targeting these aims:

1. removal and disposal of products containing asbestos;
2. minimizing adverse health effects caused by the presence of asbestos on the territory of Poland;
3. eliminating negative effect of asbestos on the environment.

### Main areas of implementation:

1. legislative activities;
2. education and information activities addressed to children and youth, trainings for employees of government and self-government administrations, development of training materials, promotion of technologies for the destruction of asbestos fibres, organisation of national and international trainings, seminars, conferences, congresses and participation therein;
3. activities related to the removal of asbestos and products containing asbestos from the constructions, public amenities and sites of former asbestos products producers, cleaning the premises, building landfills and installations for the destruction of asbestos fibres;

4. monitoring of the Programme implementation by means of electronic spatial information system;

5. activities in the area of exposure assessment and health protection.

### Costs:

- 14.5 million tonnes of asbestos products remain to be removed and the total cost of their dismantling and transport as well as disposal of produced waste containing asbestos is estimated to amount to approx. PLN 40 billion;
- cost of building 56 landfills and landfill sectors for asbestos-containing waste has been estimated to amount to approx. PLN 260 million;
- financial resources from the national budget, at the Minister of Economy's disposal, allocated to support: development of plans for asbestos-containing products removal, education and information activities and the Programme monitoring, amount to PLN 53.2 million (0.13%);
- financial resources of self-government units allocated to develop and update the plans for asbestos-containing products removal and education and information activities are estimated to amount to approx. PLN 40 million (0.10%)

#### DESCRIPTION OF THE PRACTICE

Programme partially financed from the sources of National Fund of Environmental Protection and Water Management

#### Beneficiaries

Municipalities that have inventories of asbestos and local programmes of asbestos removal

#### Form of support

Grants up to 85%

#### Supported actions

Disassembly or gathering, transportation, neutralisation, and disposal of products containing asbestos.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Weight of neutralised and disposed asbestos in the years 2011-2015: 34.377,82;
- Number of project in the years 2011-2015: 465

#### EVIDENCE OF SUCCESS

Greater awareness in the society of asbestos risks and the above figures showing changes in the Podkarpackie towns and villages.

**The National programme of asbestos removal could be an opportunity to renovate buildings according to the European energy policies!**

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The main problem for program's beneficiaries is that they receive support for the removal of asbestos but do not receive support for new elements such as for example a new roof.

#### TIME REQUIRED TO COMPLETE THE BP

-

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

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##### TYPE OF ORGANISATION

Public

##### WEBSITE

www.wfosigw.rzeszow.pl

Year	# of projects	Projects general value (thousand PLN)	Grant from Regional Fund (thousand PLN)	Grant from National Fund (thousand PLN)	Grant total (thousand PLN)	Weight of neutralised and disposed asbestos
2011	23	1 285,49	447,34	639,03	1 086,37	2 641,58
2012	71	2 431,24	931,36	1 330,68	2 302,27	6 454,76
2013	115	3 382,10	1 183,74	1 691,05	2 874,79	9 169,73
2014	131	2 928,24	919,97	1 314,24	2 234,21	7 643,00
2015	125	3 112,97	977,06	1 395,81	2 372,87	8 468,75
Sum:	465	13 140,04	4 459,47	6 370,81	10 870,51	34 377,82



PODKARPACKIE REGION



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Revitalization of historic buildings in the old city Przemysł

**PARTNER REGION**

Podkarpackie Region (Poland)

**LOCATION DATA**

Przemysł

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty

**DESCRIPTION OF THE PRACTICE**

**General objective**

Improving the professional skills of people over 45 years-old with building qualifications: architectural, construction and installation.

**Detailed objectives**

- Updating knowledge about thermal energy buildings to 195 people with building qualifications enabling them to issue energy performance certificates of buildings;
- learning support program used for preparing building energy certification for 195 enabling them to issue energy performance certificates of buildings;
- promoting active professional attitude focused on personal development.

**Target group** people over 45 years-old with building qualifications: architectural, construction and installation. It is a good example connected with experts and their awareness concerning need for additional education and improving their qualifications.

**Project activities** series of training courses for 195 beneficiaries over 45 years old in order to help them to get energy performance certificates of buildings;

1. Training: Preparation of energy performance certificates. The training discusses the methodology of the certificates together with exercises in order to improve practical skills. Training was adapted to the situation of people over 45 years old holding a building license. The need

to organize training courses in this field stemmed from the analysis of requests for specific knowledge and skills in the region. Classes were conducted in a way which did not interfere with day-to-day professional work – during the weekends. The training consisted of 32 hours of theoretical and practical classes (4 days x 8 hours). Program of training: Legal basis; Evaluation of the thermal protection of the building; RES; the methodology of calculation; Execution of training energy certificates; The use and operation of the thermal imaging camera.

2. 2. Training: Support for the drawing up of energy certificates. Each course consisted of 16 hours of practical classes, organized in participants' free time (weekends). Program of training: The scope of the building's data; discussion of the program in terms of preparation; The choice of computing solutions; Defining partitions, zones and premises; Entering data of heating and lighting installations; Analysis of errors; Generating the final certificate; Implementation of energy certificates

Financial resources: 150.000 Euro – finance from European Social Fund under Operational Program Human Capital 2007 – 2013 + own contribution of participants - 10% costs of training.

As part of the project of revitalization and thermo-modernization, 19 historic buildings in the old city of Przemysł have been renovated. All buildings were built in the late 19th and early 20th centuries and have been individually registered at the monuments register. Natural persons were the owners of those buildings.

Because of the systemic conditions and the resulting rents, regulated over many years in Poland, the condition of those buildings were very bad.

The beneficiary of the project was the Association of Owners and Managers of Houses in Przemysł, while the final beneficiaries were the building owners, individuals members of the association. All activities related to the preparation of technical documentation, formal and legal documents, building permits obtaining, project application submission and the carry out of the project was conducted on the basis of the proxies granted by the owners of the Association.

The project was implemented within the framework of measure 7.1 Revitalization of RPO cities in the Podkarpackie Voivodship 2007-2013. The total value of the project was 6,551,994.92 PLN -ca. 1,5M€. The co-financing of the RPO in podkarpackie voivodship was 75% and the rest of the funds were funded by buildings owners. The Association borrowed 1M PLN for 10 years for the project completion, because the amount of the funds collected by owners were insufficient. Nowadays, the credit is being paid back with the money collected from buildings rents.

The renovation works included:

- windows and door frames replacement
- elevators and heating renovation
- (for some buildings) heating energy sources switch
- roof coverings replacement
- telecom renovation
- (for some buildings) insulation of walls

A major issue when dealing with improving energy efficiency in historic buildings is the insulation of façades with stucco elements due to heritage constraints. That gives as an only choice the option of warming from the inner side, though is expensive as well as disturbing for residents.

Difficulties related to running the projects concerned mainly the formal and legal conditions of documents obtaining. Since the involved tenants live in different parts of Poland, the requirements imposed by some of the offices on detailed mandates greatly lengthened the process of carrying

out the work. At the same time, despite of these difficulties, this project was the only project in this type implemented by the Association in Poland. To have the opportunity to apply for funds the Association had to get many interpretations. The final interpretation deciding on the possibility of applying for funds was issued by Ministry of Regional Development in 2010.

At present, within the next RPO 2014-2020, the Association uses previous experience to implement another similar project, a typical thermo-modernization project involving 5 buildings in Przemyśl.



Before



After

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labeling: 198
- Number of households with improved energy consumption classification: 198
- Number of households engaged in support programmes: 198
- (%) Reduction of annual primary energy consumption in public buildings: N/A
- (kWh) Annual energy savings in households: N/A
- Number of households with improved energy consumption classification: 198
- (%) Reduction of the use of fossil fuels in the building sector: N/A
- Other: Improved energy efficiency in 18 multi-apartment buildings. The usable area of units with improved energy efficiency was 12,800 m<sup>2</sup>.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The project had a big impact on several factors.

The first of it is saving of the energy what refers to a reduction of carbon dioxide emissions and renters' fees. Przemyśl has been notoriously exceeding the carbon dioxide emission standards as well as the PM10 emission and its reduction is a positive effect of the project.

The second factor is to increase the comfort of the lives of renters. The dwellings are mainly occupied by low-income renters and it is the reason that they would not be able to renovate the premises. Also the owners' income did not allow for renovations to the extent that would cause

a slow buildings' degradation. Renovations have also increased the aesthetics of the city centre, so it is slowly becoming a place friendly for native population and tourists.

#### EVIDENCE OF SUCCESS

- Przemyśl has notoriously exceeded the CO<sub>2</sub> emission standards as well as the PM10 emission reduction and it is a positive effect of the project.
- Reduction of the cost of renters' premises related to the reduction of operating fees
- Increasing of the aesthetics of the city of Przemyśl (historic buildings located in the old city of Przemyśl).

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The problems may be related to the legal situation in each country as well as to the possibility of financing the property owned by natural persons.

#### TIME REQUIRED TO COMPLETE THE BP

Finished in 2013

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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Association

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# — GOOD PRACTICES FOR REGION **CROATIA**



REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Reconstructed public buildings in City of Zagreb under the ZagEE project

**PARTNER REGION**

Croatia

**LOCATION DATA**

City of Zagreb

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments
- Innovation

**DESCRIPTION OF THE PRACTICE**

Zagreb – Energy Efficient City (ZagEE) project aims to refurbish 87 public buildings and 3.000 public lighting luminaries but also to perform capacity building activities (technical, financial, managerial) of city office employees and building managers. The project is an answer to poor state and high energy consumption of public infrastructure (90% of buildings below F energy class). Project was initiated in 2012 and funded under the Intelligent Energy Europe programme - Mobilizing Local Energy Investment Project Development Assistance (MLEI PDA) which assists local and regional authorities to develop sustainable energy projects. It aims to bridge the gap between sustainable energy plans and real investment by funding activities necessary to prepare, and mobilize finance for public investment programmes. MLEI PDA proved to be the most adequate technical assistance programme for ZagEE due to:

- Minimum project size (7 vs 50 mil. € in ELENA)
- Eligible internal staff costs (ELENA – only external expertise)
- Project not eligible for JASPERS (not part of the ESIF Operational Programme)
- Right to use funding sources of its own preference (EEEE – required PDA beneficiaries to take a loan from the EEEF)

One of the primary ideas behind ZagEE project was to assess and test different financing instruments/schemes that were available in Croatia since there was no relevant experience within the city with use of instruments such as soft loans, EPC and ESI Fund grants. From technical side, the project was used to assess various technical solutions for energy renovation of several types of public buildings (kindergartens, schools, retirement homes, municipal buildings). This way the city acquired valuable information regarding expected investment costs for refurbishment of buildings and financial structuring of future renovation plans. Total investment size was approximated at 29,3 million € (26,5 mil. € for refurbishment of public buildings and 2,8 mil. € for modernization of public lighting).

Two partners formed a core team with members appointed by the Mayor of Zagreb: City of Zagreb - coordinator (with several offices in the team) and North-West Croatia Regional Energy Agency. Many different stakeholders (ministries, banks, SMEs) were engaged during the project in order to maximize the level of know-how and joint cooperation between partners.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labeling: 87
- Number of households with improved energy consumption classification: 87
- Number of households engaged in support programmes: 87
- (%) Reduction of annual primary energy consumption in public buildings: 49%
- (kWh) Annual energy savings in households: 33.526 MWh/year
- (%) Reduction of the use of fossil fuels in the building sector: 8.390 tCO2/year
- Other: Generation of renewable energy: 290 Mwh/year

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

In total 87 buildings with 226.654 m<sup>2</sup> will undergo energy renovation with expected primary energy savings of 33.526 MWh/year, 8.390 tCO<sub>2</sub>/year of avoided GHG emissions and average energy savings of 49% in public buildings and 72% in public lighting. The project will also contribute to generation of 290 MWh/year of energy from renewable energy sources. Considering the size of the project (almost 30 mil. €) ZagEE has also helped with development of the market for EE/RES contractors.

#### EVIDENCE OF SUCCESS

PDA for development of concrete energy renovation plans in cities and regions provides necessary financial spark to initiate large capital investments. Although financial structuring of the project should ideally be set before signing of the PDA contract, ZagEE proved that on underdeveloped markets where there are no tailor made financial instruments for energy renovation cities have to make the first step and create the demand for energy renovation instruments. A mandatory three-year period within which the investment has to be launched can be considered as a positive feature that creates an obligation and higher commitment level from local governments. PDA also offers very good opportunities for capacity building and training for public authorities so they can undertake similar capital investments in the future.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Replicability of PDA projects such as ZagEE is generally quite high, especially in other cities in the region. Biggest obstacle to transfer of good practices lies within specific local frameworks and available funding schemes in each country. Political consensus and commitment from all sides is a pre-condition that has to be met before the initiation of project in order to ensure execution of such long-term capital investment. Project implementation followed standard procedures for reconstruction of city infrastructure and therefore was quite straightforward to follow and replicate.

#### TIME REQUIRED TO COMPLETE THE BP

4 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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*Due to its inherent complexity, the ZagEE good practice was broken down into other five good practices*



REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Project Development Assistance instrument (PDA) – ZagEE project

**PARTNER REGION**

Croatia

**LOCATION DATA**

City of Zagreb

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments

**DESCRIPTION OF THE PRACTICE**

Zagreb – Energy Efficient City (ZagEE) project was initiated in 2012 as a result of analyzes done within the Sustainable Energy Action Plan for the City of Zagreb -2010. Project Development Assistance (PDA) was obtained from the Intelligent Energy Europe programme - Mobilising Local Energy Investment (MLEI PDA). PDA is a financial instrument that supports primarily public sector investors (cities, regions, public infrastructure operators) by bridging the gap between project idea and finance. The project targeted public buildings that were in poor condition and in need of energy refurbishment and modernization of public lighting. The PDA for ZagEE project focused on preparatory activities that included: revision of energy audits, creation of building stock database with EE/RES measures, development of project documentation (feasibility studies, main designs) and public procurement for execution of works and supervisory activities. Key challenges addressed by the PDA through ZagEE project were:

- Lack of necessary technical expertise to implement large energy renovation projects
- Bundling of smaller, dispersed energy renovation projects into larger, more bankable packages (lowering transaction costs)
- Lack of financial (grant) support for preparatory activities on national level

PDA facility requires a leverage factor, meaning that each Euro of EU funding must lead to a minimum level of 15 Euros of investments in sustainable energy. Also, the investments had to be launched within the three-year period. However, these rigorous requirements led to development of more realistic investment programme of higher quality.

IEE MLEI PDA also proved to be the most adequate technical assistance programme for ZagEE due to:

- Minimum project size requirements (7 vs 50 mil. € in ELENA)
- Eligible internal staff costs (ELENA – only external expertise)
- Project not eligible for JASPERS (not part of the ESIF Operational Programme)
- Right to use funding sources of its own preference (EEEE – required PDA beneficiaries to take a loan from the EEEF)

Submission of ZagEE project proposal was done through IEE's annual call for proposals in spring 2012 while the project officially started in April 2013. Proposers had to prove their financial and technical capacity to undertake such demanding investments and the PDA managing authority (EACI, now EASME) required measurable performance indicators in order to monitor project's execution.

Key lessons learned from using the IEE MLEI PDA are:

- A well-developed SEAP is a mandatory requirement for using the PDA but also a good starting point for making an investment programme
- Political commitment from local government and a general consensus from the community is necessary due to the longevity of the project
- PDA should only target realistic investments due to the payback clause in case that the investments are not launched
- Public procurement criteria for development of project documentation (main designs) should focus on quality (bidders' references) and not solely on the price.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labeling: 87
- Number of households with improved energy consumption classification: 87
- Number of households engaged in support programmes: 87
- (%) Reduction of annual primary energy consumption in public buildings: 49%
- (kWh) Annual energy savings in households: 33.526 MWh/year
- (%) Reduction of the use of fossil fuels in the building sector: 8.390 tCO<sub>2</sub>/year
- Other: Generation of renewable energy: 290 Mwh/year

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

In total, PDA was used for development of project documentation for renovation of 87 buildings with total heated area of 226.654 m<sup>2</sup> and creation of master plan for modernization of public lighting (3000 lamps). The PDA will lead to total investment of 29.3 million Euros.

#### EVIDENCE OF SUCCESS

PDA for development of concrete energy renovation plans in cities and regions provides necessary financial spark to initiate large capital investments. Developed project documentation made the investments more concrete and mature and by aggregating single renovation projects they became more attractive (bankable) to financial institutions and ESCOs.

PDA was also used for financing organization of capacity building and training sessions for public authorities so they can undertake similar capital investments in the future. ZagEE has helped with development of the market for energy renovation services (i.e. elaboration of main designs).

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Replicability of PDA projects such as ZagEE is generally quite high, especially in other cities in the region. However, biggest obstacle for transferring this good practice lies within the project developer and its financial and technical capacity to undertake such ambitious investment. However, the EU has made a number of different PDA facilities that are adjusted to the size and maturity of investment programmes.

#### TIME REQUIRED TO COMPLETE THE BP

4 years

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**ORGANIZATION**  
City of Zagreb

**TYPE OF ORGANISATION**  
Local government (with status of region)

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<http://www.zagreb.hr/>



REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Finding and using innovative financial schemes for the reconstruction of municipal buildings – ZagEE project

**PARTNER REGION**

Croatia

**LOCATION DATA**

City of Zagreb

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments

**DESCRIPTION OF THE PRACTICE**

PDA is a financial instrument that supports primarily public sector investors (cities, regions, public infrastructure operators) by bridging the gap between project idea and finance. One of the primary ideas behind ZagEE project was to assess and test different financing instruments/schemes that were available in Croatia since there was no relevant experience within the city with use of instruments such as soft loans, EPC and ESI Fund grants in energy renovation projects. The PDA was used to fund preparatory activities while financing of the capital investment, which was approximated at 29.3 million € (26.5 million € for refurbishment of public buildings and 2.8 million € for modernization of public lighting) had to be structured during project duration.

With an underdeveloped financial market, banks in Croatia were risk averse and conservative, meaning that financing periods proposed by banks were usually too short for deep renovation of buildings. Only three viable financial instruments were available at the time (2012), before Croatia became a member of the EU:

- Grants - from the Environmental Protection and Energy Efficiency Fund (EPEEF)
- Soft loans - from the Croatian Bank for Reconstruction and Development (HBOR)
- ESCO model

At the beginning of the project an agreement was made with the EPEEF (national fund) to co-finance the total investment with a 40% grant. The rest of the investment was allocated from the city budget. Since project documentation (main designs) was already developed within the project, ESCO was not an option (ESCOs like to develop their own project documentation and technical solutions).

Eight buildings were financed through a special programme - Energy Efficiency Finance Facility (EEEF 2007) managed by the Croatian Bank for Reconstruction and Development (HBOR). This facility was developed by the European Commission and implemented in co-operation with the European Investment Bank (EIB) while HBOR was only disbursing the funds. This financial instrument consisted of an EIB loan and a EU grant component which could only be obtained if the investment achieved at least 30% of energy savings. If this was the case the grant contribution was then used for reduction of loan's principal amount by 15%. All eight buildings achieved the minimum level of energy savings, thus reducing the loan principal by 15%.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labeling: 87
- Number of households with improved energy consumption classification: 87
- Number of households engaged in support programmes: 87
- (%) Reduction of annual primary energy consumption in public buildings: 49%
- (kWh) Annual energy savings in households: 33.526 MWh/year
- (%) Reduction of the use of fossil fuels in the building sector: 8.390 tCO2/year
- Other: Generation of renewable energy: 290 Mwh/year

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Financial structuring was made for renovation of 87 buildings with expected primary energy savings of 33.526 MWh/year, 8.390 tCO<sub>2</sub>/year of avoided GHG emissions and average energy savings of 49% in public buildings and 72% in public lighting. The project has also contributed to creation of better working conditions for buildings users and generation of 290 MWh/year of energy from renewable energy sources. Considering the size of the project (almost 30 million €) ZagEE has also helped with development of financial products for energy renovation projects.

#### EVIDENCE OF SUCCESS

Projects that target deep renovation buildings have to have adequate financial structuring (certain level of grant support, soft loans with long repayment periods) due to long payback periods. Therefore, ZagEE project was fortunate enough to assure funding sources that addressed these requirements.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Replication level depends on specific financial market conditions and available funding schemes in each country. Political consensus and commitment from all sides is a pre-condition that has to be met before the initiation of project in order to ensure execution of such long-term capital investment. Project implementation followed standard procedures for reconstruction of city infrastructure and therefore was quite straightforward to follow and replicate.

#### TIME REQUIRED TO COMPLETE THE BP

3 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Monitoring and verification of energy consumption and achieved savings through Energy Information System - ZagEE project**

**PARTNER REGION**

Croatia

**LOCATION DATA**

City of Zagreb

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Innovation

**DESCRIPTION OF THE PRACTICE**

The City of Zagreb developed its own Energy Information System (EIS) software with Končar – Electronic and Informatics Inc in order to establish a more integral solution for energy management of its own buildings. Although an energy monitoring system already exists on national level (called ISGE) the City decided to make a more complex and comprehensive software that would provide additional functionalities such as:

- Support in planning investments into energy refurbishment and monitoring refurbishment projects (measurement and verification of energy savings).
- Interconnectivity with smart meters subsequent to creation of data bridges, which enables consumption monitoring on a daily basis.
- Early detection and alarming in case of breakdowns, unexpected events and poor energy performance of buildings.

EIS enables simplified energy and water consumption and costs data access as well as easy graphical and tabular data representation and reporting from conducted analysis. Part of functionalities also includes a simple user interface for local energy efficiency plans data preparation and reporting.

As a part of the integral renovation concept within the ZagEE project all buildings were equipped with smart meters and remote reading of energy consumption. 87 buildings will be remotely connected to EIS while remaining compatible with ISGE. Monitoring for changes in energy performance is important to evaluate the effect of improvements that have been made and to provide evidence of progress towards improved energy savings. Monitoring and verification of energy savings through smart meters and EIS is particularly important for those funding sources (HBOR-EIB EEFF 2007 facility) that require verification of building's energy savings through actual measurement of energy consumption after the refurbishment. Due to better energy management of public buildings the City can easily check whether consumption targets from Sustainable Energy Action Plan (SEAP) are being met and intensify its efforts if it is lagging behind expected progress.

Second phase of EIS software development will include modules for making energy efficiency investment scenarios, cost assessment and cost control reports. An estimate of future energy spending will be based on various algorithms and multiple indicators monitoring. Parameters which represent the ratio of dependent and/or independent variables are configured by end user.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labeling: 87
- Number of households with improved energy consumption classification: 87
- Number of households engaged in support programmes: 87
- (%) Reduction of annual primary energy consumption in public buildings: 49%
- (kWh) Annual energy savings in households: 33.526 MWh/year
- (%) Reduction of the use of fossil fuels in the building sector: 8.390 tCO<sub>2</sub>/year
- Other: Generation of renewable energy: 290 Mwh/year

**Indicators above are related to other practices as well, specific allocation to this GP is not possible. Specific indicators are as follows:**

- (%) Reduction of the use of fossil fuels in the building sector
- (%) Reduction of annual primary energy consumption in public buildings: 3%

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Energy Information System for the City of Zagreb performs analysis and monitoring activities about critical consumption periods for all buildings within the system. EIS system alerts responsible persons for taking some actions respecting the severity of recognized event. This functionality represents mechanism for avoiding extreme and unwanted energy and water consumption costs and on average helps to reduce overall energy consumption of all buildings up to 3%.

#### EVIDENCE OF SUCCESS

EIS application currently has 957 public buildings connected to the system. With over 2000 public buildings owned by the City of Zagreb and only 100 of them with installed remote smart metering system the City will intensify its efforts in order to connect all buildings to the system. This measure is necessary in order to ensure better energy management of public buildings and upgrade its SEAP planning tools.

Energy management tools for public buildings are quite common but expensive applications. EIS software was developed with an international corporation and therefore is not an open source, freely licensed software. However, the basic concept and scheme of the software can be had and freely distributed.

#### TIME REQUIRED TO COMPLETE THE BP

4 years

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REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Inducing change in behaviour through energy managers and end-users capacity building - ZagEE project

**PARTNER REGION**

Croatia

**LOCATION DATA**

City of Zagreb

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

Besides energy renovation, project ZagEE's secondary objectives were to develop and apply management and learning tools for use by building managers and users in order to improve energy management of newly renovated buildings. Poor maintenance can hamper the energy efficiency of lighting, heating and air conditioning systems. Additionally, regular maintenance checks can be invaluable at spotting problems and sources of waste. To ensure that energy awareness gets incorporated into maintenance activities the city developed a comprehensive but easy to use

Guide for facilities managers of buildings renovated through ZagEE project. Facility managers were also involved as advisors during the planning process in order to receive maximum feedback from building users. This two-way communication was additionally reinforced with a series of capacity building events for facility managers that were held by City of Zagreb and REGEA's experts. Facility managers were trained to work with new RES/EE equipment and to identify warning signs that heating/cooling/lighting systems are operating inefficiently.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labeling: 87
- Number of households with improved energy consumption classification: 87
- Number of households engaged in support programmes: 87
- (%) Reduction of annual primary energy consumption in public buildings: 49%

- (kWh) Annual energy savings in households: 33.526 MWh/year
- (%) Reduction of the use of fossil fuels in the building sector: 8.390 tCO2/year
- Other: Generation of renewable energy: 290 Mwh/year

**Indicators above are related to other practices as well, specific allocation to this GP is not possible. Specific indicators are as follows:**

- Number of households engaged in support programmes: 87
- (kWh) Annual energy savings in households: 3.300 Mwh/year thanks, in part, to better energy management.

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

In total, 57 building managers have been trained in 2015 and 2016 while thirty more will receive education in 2017. Good energy management of public buildings will presumably result in energy savings of about 10% (3.300 MWh/year).

**EVIDENCE OF SUCCESS**

Capacity building for facility managers has to be a mandatory follow up after the deep energy renovation has taken place. By improving levels of their knowledge and awareness significant energy savings can be achieved. Energy information system (EIS), implemented by the city will be used to monitor the effects of this capacity building and to ensure that buildings are being properly managed. Early warning system will be used to detect and minimize damage of system failures.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

Guide for facilities managers is publicly available in Croatia. They can be downloaded freely but need translation.

**TIME REQUIRED TO COMPLETE THE BP**

1 year

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**REGION CROATIA**



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Development of buildings stock register – ZagEE project**

**PARTNER REGION**

Croatia

**LOCATION DATA**

City of Zagreb

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Innovation

**DESCRIPTION OF THE PRACTICE**

Part of the project development assistance (PDA) obtained from the Intelligent Energy Europe programme - Mobilising Local Energy Investment (MLEI PDA) related to the ZagEE project was used to develop a buildings stock database (register), a comprehensive database of buildings which included all information and data available from previously performed energy audits as well as from regular gathering of data on energy performance and consumption of buildings within the City of Zagreb. Energy audits have been performed for all 87 buildings planned to be included in the renovation under the ZagEE scope. However, the audits have been performed within a time span of 4 years (from 2008 to 2012) and, consequently, part of the information contained was outdated and had to be updated and validated. This was especially true for energy prices (gas, electricity, heating oil) but also investment costs of energy efficiency and RES measures. Furthermore, part of the audits were performed before the Ministry of Construction and Physical Planning adopted the Methodology for performing energy audits (June 2009), thus these need a more in-depth update and harmonization with new methodology.

After all energy audits had been validated and updated, all available information and data from these were entered into a common register and database. The first step was the organization of data and definition of functional features of the register. A minimum functionality included the ability to sort and query information and data separately for each energy efficiency and RES measure. Querying capabilities included sorting of all EE/RES measures for which a certain pay-back period is desired and for which the sum of total investment is below a desired threshold. After the functional features had been defined and enabled, the data available from energy audits (approximately 500 EE and RES measures) was entered into the common register and database.

The final task was to perform the analysis of data available within the common register and database and present results to all relevant stakeholders included in the investment decision process. This included performing initial analysis, preparing and holding presentations for stakeholders and implementing feedback regarding investment decisions. Key output of this project segment was to produce concrete directions for development of main project designs.

Lessons learned from this process were numerous:

- Development of buildings register should come before the application to PDA because the information about the size of the investment and expected energy savings are based on the buildings register
- Constant updates of energy prices and equipment costs have to be done to reflect cost-effectiveness of potential EE/RES measures
- Energy audits of public buildings should not be done purely because of legal requirements (which usually reflects their quality) but as a primary measure for better energy management of buildings and realization of its investment potentials
- Revision of energy audits can only be made by an experienced and skilled team, preferably members of the project consortium

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labeling: 87
- Number of households with improved energy consumption classification: 87
- Number of households engaged in support programmes: 87
- (%) Reduction of annual primary energy consumption in public buildings: 49%
- (kWh) Annual energy savings in households: 33.526 MWh/year
- (%) Reduction of the use of fossil fuels in the building sector: 8.390 tCO<sub>2</sub>/year
- Other: Generation of renewable energy: 290 Mwh/year

*Indicators above are related to other practices as well, specific allocation to this GP is not possible.*

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

In total, a database was made with portfolio of 87 buildings with total heated area of 226.654 m<sup>2</sup> and more than 500 energy efficiency or renewable energy measures.

#### EVIDENCE OF SUCCESS

PDA for development of buildings register is the foundation of the planning process considering that it provides information about the size of the investment, expected energy savings and cost-effectiveness of each EE/RES measure. The register enables public authorities to have a better overview of their building stock and to make decisions on energy renovation based on environmental (ton CO<sub>2</sub>, kWh) or financial (€ savings) indicators.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

The replication of the buildings register is very high and it has been made available to general public on the project's website. However, obtaining data from energy audits could present a problem to cities while determining investment costs for EE/RES measures requires an experienced team of experts.

#### TIME REQUIRED TO COMPLETE THE BP

1 year

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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REGION CROATIA



GOOD PRACTICE FICHE

TITLE OF THE GOOD PRACTICE

System for monitoring, measuring and verification of energy savings (SMIV)

PARTNER REGION

Croatia

LOCATION DATA

Country-wide

TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Innovation

DESCRIPTION OF THE PRACTICE

In order to measure achieved savings in a **unified and proper manner** and in accordance with applicable Croatian law on energy efficiency, Center for Monitoring Business Activities in the Energy Sector and Investments - CEI has, in cooperation with the German Society for International Cooperation - GIZ, developed a System for measuring and verifying energy savings (SMiV) to which all plans and implemented energy efficiency measures are entered. Public administration, companies that have energy performance contracts, as well as the Fund for Environmental Protection and Energy Efficiency, are obliged to enter all implemented energy efficiency measures. This means that for every implemented measure there will be a method of reporting and verification of real savings and the predictions will be easily compared with actual achieved results.

**The main purpose of SMIV is to monitor the implementation of the National Action Plan for Energy Efficiency.** Energy efficiency measures are monitored and verified in four sectors of final energy consumption: household, industry, service sector and transport. The register of implemented measures includes storing the following data: energy savings (kWh), reducing emissions (ton CO<sub>2</sub>), the costs of the measures implemented (investment measures). The register of energy efficiency plans involves storage targets and planned energy efficiency measures for cities, counties, municipalities and other obliged sides. This kind of monitoring is a prerequisite for systematic and consistent measurement of savings achieved at the national level.

The application uses bottom-up methodology as described in the **Regulations on the methodology for monitoring, measurement and verification of energy savings**. According to the Regulations the following measures can be implemented: integrated restoration of existing facilities and building services sector, restoration of the thermal insulation of certain parts of the building envelope, new installation or replacement of heating systems for hot water in residential buildings and buildings of the service sector, installation of equipment for individual heat metering, solar thermal systems for domestic hot water in residential buildings and buildings of the service sector, heat pumps, new installation or replacement of the air conditioning in residential buildings and buildings of the service sector, replacement of existing and installation of new appliances, replacement of existing or installation of new office equipment, replacement of existing and installation of new luminaries in homes, replacement, improvement or installation of new lighting system and its components in buildings of the service and industrial sectors, improvement or installing new public lighting system, replacement of existing and purchase of new efficient vehicles, promoting eco-driving, efficient electric motors in industry and energy audits.

PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling
- Number of households with improved energy consumption classification
- **Number of households engaged in support programmes: 8.000**
- (%) Reduction of annual primary energy consumption in public buildings
- **(kWh) Annual energy savings in households: 136.000.000**
- Number of households with improved energy consumption classification
- Other: Annual energy savings in all sectors: households, public, transport, industry

INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Total energy savings and reducing CO<sub>2</sub> emissions calculated through SMIV is:

- for 2015: 214.000.000 kWh and 52.058 ton CO<sub>2</sub> and
- for 2016: 58.000.000 kWh and 11.501 ton CO<sub>2</sub>.

#### EVIDENCE OF SUCCESS

Through SMIV, Croatia is collecting data on energy savings for all sectors. SMIV uses **bottom up methodology** to calculate energy savings for every building, house, car, lightbulb etc.

Currently, there is almost **8.000 implemented measures in SMIV for 2015 and 2016**.

Facilitated implementation of energy analysis - **all data in one place**.

Facilitated **monitoring of energy savings and reduction of CO2 emissions** at the level of the unit which has to make energy plan in accordance with the Energy Efficiency Act.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Main barrier for the implementation is the need for creating strong system with obligation through national acts. Croatia has obligated all public-sector entities, ESCOs and subsidy providers to insert data about implemented energy efficiency measures into SMIV. Other barriers could be promotion and education of users of application.

#### TIME REQUIRED TO COMPLETE THE BP

18 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

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##### TYPE OF ORGANISATION

government agency

##### WEBSITE

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REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Rural electrification project

**PARTNER REGION**

Croatia

**LOCATION DATA**

Counties: Karlovac, Zadar, Požega-Slavonia, Lika-Senj, Sisak-Moslavina

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty

**DESCRIPTION OF THE PRACTICE**

In Croatia there are still inhabited households in rural areas that have no access to electricity. For solving the access to electricity, the United Nations Development Program (UNDP) in Croatia, in cooperation with the Environmental Protection and Energy Efficiency Fund, College for Information Technologies and with the support of counties and municipalities is carrying out a project of the Rural electrification under which households are equipped with solar systems to produce electricity.

More than 50 solar systems for priority households are installed. So far, results are showing that the model of electrification of rural areas using solar systems is economically, socially and environmentally advantageous, and thus successful implementation of the project has enabled access to electricity to its final beneficiaries, employment of local residents on its installation and the production of electricity from clean, renewable energy sources. For the objects several kilometers away from the power grid, solar systems are up to 25 times cheaper than building power grid close to the facility, taking into account the total cost of ownership in 25 years, the lifetime of the equipment and system maintenance.

This approach which will allow homes to access electricity is based on usage of so called “island” solar systems, without connecting to the grid. Such systems generate electricity through photovoltaic panels and store it in batteries that will last up to three days in a case of bad weather. There are three typical systems planned, depending on the number of household members. The systems will allow users to use all the standard household appliances.

The package given to the households for usage contains the aggregator that is used for the production of electricity in the case of several foggy days or a longer period without the sun; energy-efficient refrigerator and a set of LED bulbs. One of the main criteria is that the household owners or co-owners live there permanently or most of the year, and that the household is more than 1km away from the power grid. On this way, families without electricity living in remote areas will have access to energy from renewable sources. The solution is a modern, environmentally sustainable and cost effective.

The equipment in the pilot project (realized in Karlovac County) that is being installed is from Croatian manufacturers. The co-financing of renewable energy projects creates a market for domestic companies that have opted for green technologies. Solar panels that are being installed in five houses in the Karlovac County are produced in company Solvis from Varaždin (CRO). Other supporting equipment is manufactured by the company Infoton from Novi Marof (CRO).

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

Please tick at least any of the self-defined performance indicators in the Application Form (related to Policy Instruments) that may apply to the good practice.

- Number of households with improved energy labelling
- Number of households with improved energy consumption classification
- **Number of households engaged in support programmes: 50**
- (%) Reduction of annual primary energy consumption in public buildings
- (kWh) Annual energy savings in households
- Number of households with improved energy consumption classification
- (%) Reduction of the use of fossil fuels in the building sector

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Renewable energy capacity installed: 76 kW (solar PV).
- Renewable energy production: 36 MWh/year.
- Fuel oil savings: 16,465 l/year.
- Financial savings: 17,500 EUR/year.
- With the introduction of electricity the targeted households have experienced an improvement in sanitary, social and technological standards of living.
- New contracts for domestic companies.

#### EVIDENCE OF SUCCESS

In 50 households off-grid solar PV systems were installed instead of grid extension. More than 3.5 million EUR was saved, because autonomous solar PV systems are 14 times cheaper than grid extension cost on average.

The model of electrification of rural areas using solar systems has proven **economically, socially and environmentally advantageous** due to enabled access to electricity to its final beneficiaries, employment of local residents on its installation and the production of electricity from clean, renewable energy sources. A positive outcome is also the **independence from electricity distribution network**.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

A possible problem or barrier could be national legislation regarding universal service for electricity. In addition, only 50 households in Croatia were living in rural areas and far from the grid. If the number of such households is higher different financing and technical models are needed.

#### TIME REQUIRED TO COMPLETE THE BP

19 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Croskills: Lifelong training plan for building workers**

**PARTNER REGION**

Croatia

**LOCATION DATA**

Country-wide

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

This GP is focused on the first component of the Croskills project, itself being part of the larger Build Up Skills initiative. Co-funded by the Intelligent Energy Europe programme of the European Union, Croskills is aimed at life-long education of workers in the field of energy efficiency in building thus strengthening qualifications of craftsmen, employed and unemployed construction workers.

The project consists of 6 components:

1. Training Plan
2. Train The Trainers
3. Test-Trainings
4. Certification
5. Sustainability Plan
6. Info-Campaigns

From 2012-2013 the project gathered relevant Croatian institutions and professional associations in the construction, energy and education sectors through the **National Qualification Platform**, resulting in the formulation of needs and priorities within the **National Roadmap and action plan**, formally endorsed by 23 sectoral stakeholders.

Croatia, with some exceptions in the institutional vocational education, has no systematic training of students and construction workers in energy efficiency, even though the number of construction workers far exceeds the number of other experts in the field of construction (engineers, etc.). There is also no certification scheme for workers or companies related to EE in buildings. Therefore, this component was focused on de-

veloping the training plan that includes curricula and training modules with accompanying teaching materials, in order to close the educational gap in the construction sector.

A total of 18 training modules – three modules for each of the 6 key building professions - bricklayer, plasterer, carpenter, housepainter, roofer, drywall installer - have been developed in accordance with the Croatian Qualifications Framework (levels 2 and 3).

**Training plans include:**

- permanent on-the-job training of qualified on-site workforce,
- qualification of unqualified workers for on-site construction jobs;
- pre-qualification of (un)employed construction workforce for other/additional on-site construction profiles,
- certification of non-formal and informal learning outcomes - certification exam without a course taken.

**FORMAT of the training curricula:** Each of 18 training modules consists of 2-6 modules depending on the professions and EQF level, as a combination of theoretical lectures (at training centers) and practical work (full-scale models within the training centers and at locations of industrial partners). Special attention is given to the new construction products and technologies which are applied in the building of new and refurbishment of existing buildings, up to the NZEB standard.

**DURATION:** 10-40 hours, depending on EQF level and profession, on average 20 hours per each training course.

Currently ongoing is the development of demonstration tools:

- Full-scale models of building components/parts, available at training centers to ease the practical part of the training
- Short video-clips on key skills for each profession, illustrating in a simple way how to perform the most relevant tasks at the typical building sites
- Thermography cameras will be rented for real time demonstration of quality control of construction works and how it affects the energy efficiency of a building. The implementation of video content into lectures and e-learning (web tools for education, online educational resources, mobile learning, personal learning networks etc.) will simplify the understanding of presented topics.

**Participative and collaborative approach** through the National Platform and for the development of National Roadmap and Action Plan was essential

The training plan is targeting **6 priority building professions**.

Within the framework of Croskills **1200 workers** are to be educated on EE in construction, **10 training centres** are to be accredited and **200 trainers** certified to deliver the training programmes.

An important aspect of this GP is to **raise awareness and attractiveness** of the 6 building professions.

Indicators involved: training plans for building workers, collaboration platforms incorporated, action plans developed.

#### EVIDENCE OF SUCCESS

The development process for the **National Roadmap and Action Plan** was open for all interested parties, through national consultations and meetings with focus groups held during 2013 throughout the country, in order to ensure presence of the highest possible number of interested stakeholders.

The **National Platform** was involved in the process of developing the lifelong education schemes for building workers as advisory body and will continue in this capacity throughout the Croskills project.

**Factors that might hamper the transfer:** The main important factor in developing the training plan was the participative approach and support of main national stakeholders. Lack of collaboration and agreement on priorities between those stakeholders would be a serious obstacle. A question of financing can arise later during the implementation of trainings as construction workers have limited amount of time and funds to spare for education – so a sustainable funding plan has to be in place.

#### TIME REQUIRED TO COMPLETE THE BP

18 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**TYPE OF ORGANISATION**

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**WEBSITE**

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REGION CROATIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

croenergy.eu

**PARTNER REGION**

Croatia

**LOCATION DATA**

online

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments

**DESCRIPTION OF THE PRACTICE**

CROENERGY.EU is a specialized crowdfunding platform for financing projects in the field of energy efficiency, renewable energy sources and environmental protection developed and launched by REGEA in 2016. The primary objective of the platform is to promote and maximize the use of this innovative financing mechanism in Croatia through mutual cooperation and dialogue with key market stakeholders (ministries, development agencies, NGOs, energy cooperatives). Currently, the platform provides donation and reward based funding models while crowdlending and crowdinvesting models would be added gradually, as the market becomes more mature and ready. The platform acts as a match-maker for raising funds to avoid potential financial risks and is open to public sector fundraisers due to legal issues with involvement of private companies and physical persons. Campaigns are pre-selected as fundraisers' background is checked, including feasibility of the investment.

Development of the platform required significant investment costs, considering there were no "off the shelf" website solutions. A custom CMS web application was made with an online payment gateway. Not using the third party payment systems such as Paypal caused high financial transaction costs for platform managers but provided a much simpler interface for project backers.

Main weaknesses of the platform and market as a whole arise from the low levels of awareness as both citizens and market regulators are not familiar with crowdfunding model (less than 2% of total population in Croatia). There is also a significant gap between crowdfunding awareness and actual participation, with only five percent of the crowdfunding-aware have ever participated as a.

Crucial obstacle for development of the crowdfunding market lies within the restrictive and inflexible legal framework. Crowdlending is under strict regulation of Law on capital market which makes the whole procedure complicated and expensive. Public authorities cannot use this model for any type of projects which is the official standpoint of the Ministry of finance. Crowdinvesting is possible in form of a silent partnership in start-ups while conventional start-ups are expensive to fund this way. An entrepreneur cannot publicly present its business idea and collect money for it unless he has already established a company – which goes against basic market testing logic of crowdfunding. Croenergy project will pursue the changes in this regard, as crowdfunding needs to be regulated but under its own legal framework that respects its specificities.

Croenergy platform has had success with development and funding of one pilot project (another one is under way) with 121% of targeted funds raised. Success can mostly be attributed to a very solid marketing strategy, constant presence in the media and local community that recognized the project and was willing to back it up.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

**(only first campaign that raised 16.000€)**

- Number of households with improved energy labelling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 1
- (%) Reduction of annual primary energy consumption in public buildings
- (kWh) Annual energy savings in households: 20.000 kWh
- (%) Reduction of the use of fossil fuels in the building sector

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

First (pilot) campaign on the Croenergy platform was a complete success, with targeted amount of funds (16.000 €) raised within the expected time period. Local government combined the funds from the crowdfunding campaign with its own resources in order to leverage additional funds needed for the renovation (65.000 € in total). Energy renovation of the kindergarden in the town of Pregrada resulted in energy savings of around 20.000 kWh/year and avoided emissions of 3.680 kg CO<sub>2</sub>e/year. The renovation also significantly improved the quality of work and comfort of kindergarden users, considering that the building had serious issues with roof leaking.

#### EVIDENCE OF SUCCESS

Crowdfunding is a viable and interesting model for financing sustainable energy projects since it enables citizens to become investors or contributors to its own community infrastructure or innovative projects. Crowdfunding campaigns also provide an opportunity for cities and municipalities to closely work with citizens and involve them in the planning phase of projects that have an added social dimension. Entrepreneurs, and especially start-ups have an opportunity to test their ideas before investing significant financial resources. Key advantages of crowdfunding campaigns lie in the small size of its donations and dispersion of potential risks for their backers. Crowdfunding also promotes the use of modern technology, social media and online payment options which helps with overall digitalization levels of the community.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Key barriers for transfer of good practice to other partners lie within different national legal framework regarding crowdfunding and low awareness levels of potential campaign backers. Support from the government, as well as a regulatory framework with more relaxed requirements than current securities regulations for certain forms of crowdfunding, are usually missing in the most EU countries. Also, building an ecosystem takes a lot of time and without a strong crowdfunding promotional campaign there is little opportunity for the general public to gain an understanding of the wide-ranging benefits crowdfunding can have on the economy and job creation. However, general pointers for starting a crowdfunding platform or campaign can be made and the level of replication can be considered very high.

#### TIME REQUIRED TO COMPLETE THE BP

1 year

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**ORGANIZATION**  
REGEA – North-West Croatia Regional Energy Agency

**TYPE OF ORGANISATION**  
sectoral agency

**WEBSITE**  
<http://croenergy.eu/>  
<http://www.regea.org/>



REGION CROATIA

C11

GOOD PRACTICE FICHE

TITLE OF THE GOOD PRACTICE

Bračak Energy Centre

PARTNER REGION

Croatia

LOCATION DATA

Bračak, City of Zabok, Krapina-Zagorje County

TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Professionalization of the construction sector
- Innovation

DESCRIPTION OF THE PRACTICE

The reconstruction and revitalization of Bračak Manor is a unique example of energy rehabilitation of a historic building under cultural heritage protection focusing on two aspects: **application of advanced technical solutions** and **repurposing of a public building**.

During history the Manor has changed its purpose twice, starting off as an aristocratic summer house in late 1800s and turning into a hospital after WWII. When in 2007 the hospital relocated the old Manor was emptied and in need of a revitalization. A collaboration between the estate owner, Krapina-Zagorje County, and REGEA led to the conceptualization of Bračak Energy Centre, a **regional hub of excellence and knowledge in energy efficiency and renewable energy sources** hosting a **business incubator** for promising start-up companies in the field of energy, a multi-purpose **education and demonstration centre** and **offices** of the regional development agency ZARA and the regional energy agency REGEA. A strong visual identity has been developed by REGEA to accompany the promotion of this innovative idea.

The idea for the project **started in 2011** when the General Hospital Zabok and REGEA signed an agreement on the use of the building. In 2013 Krapina-Zagorje County authorized REGEA to implement the reconstruction and revitalization of Bračak Manor. In 2015 funding was ensured and construction works began which are to be completed until the **end of 2016**.

Full funding in the amount of **€3,2 million** for this project has been ensured through a government decision declaring Bračak Energy Centre a project of national importance for the environment, nature, energy efficiency and renewable

energy sources. The funding institution is the Croatian Environmental Protection and Energy Efficiency Fund.

Main technical features include:

- Highly efficient biomass boiler using wood pellets (ETA up to 94,9%).
- Micro CHP for hot water and power production during summer period.
- Air to water heat pump system for cooling and heating in transitional periods.
- External wall insulation on the inside and energy efficient windows and doors (U<1,4 W/m2K).
- Highly efficient internal and external lighting systems (LED and FLUO T5).
- HVAC system (heating, ventilation and air conditioning).
- Advanced central monitoring and control system (heating, cooling, energy consumption).
- Rainwater harvesting system for irrigation of green areas and as wastewater treatment.
- Electric vehicle charging station and purchase of one electric vehicle.
- Comprehensive interior conservation works (decoration and replication).
- *Energy efficient appliances for offices and in-house restaurant.*

PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling: 1
- Number of households with improved energy consumption classification: 1
- Number of households engaged in support programmes: 1
- (%) Reduction of annual primary energy consumption in public buildings: 70% for heating
- (kWh) Annual energy savings in households: N/D
- (%) Reduction of the use of fossil fuels in the building sector: N/D

INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The complete reconstruction of the building will result in an upgrade from EPC rating E to rating B with the share of 88% of renewable energy sources. Energy rehabilitation will reduce energy consumption for heating by up to 70%, or from the initial 213,0 kWh/m<sup>2</sup> to 64,0 kWh/m<sup>2</sup>.

The reconstruction and maintenance of green areas around the building will contribute to **safeguarding the natural** surroundings.

It is expected that at least **40 new jobs** will be generated while the reconstruction process itself has boosted the domestic construction sector and improved the **skills of workers and professionals**.

#### EVIDENCE OF SUCCESS

Besides the obvious impact the project has on the **environment and energy efficiency**, the application of cutting-edge technical solutions was the key to success: **innovation** has been both an answer to a challenge of carrying out energy rehabilitation of a historic building and the means to raising the bar for energy efficiency.

The project will improve the **quality of lives of local citizens** by creating new services, such as the educational centre, business incubator and local restaurant, which in turn will contribute to **employment and regional development**.

Overall, the project will **raise public awareness** on the efficient use of natural resources and the importance of sustainable development on a continuous basis.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Energy rehabilitation of a building under cultural protection can be very challenging if **requirements set by conservation officers** are very strict.

Reconstruction of a historic building in addition to the application of innovative materials and advanced technologies can be very costly, so an adequate **financing model** has to be in place

The reconstruction process can be hampered by **unskilled workers and professionals**, so a careful selection of project design, construction and supervisory services is essential

**Cooperation between key stakeholders**, such as the building owner, future user as well as other involved institutions is the basis for such a project to kick-start.

#### TIME REQUIRED TO COMPLETE THE BP

5 years (soft activities are continuous)

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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North-West Croatia Regional Energy Agency

##### TYPE OF ORGANISATION

Sectoral agency

##### WEBSITE

<http://www.regea.org/>



REGION CROATIA

**C12**

**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Through Knowledge to a Warm home**

**PARTNER REGION**

Croatia

**LOCATION DATA**

Sisak-Moslavina County

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty

**DESCRIPTION OF THE PRACTICE**

*"Through Knowledge to a Warm Home"* is a project implemented by a domestic NGO DOOR in collaboration with a local government, City of Petrinja. The project has succeeded in establishing energy advice as a new social service on regional level with the intention to combat energy poverty through a change in regional policy.

Under the project 80 households were equipped with energy efficient appliances for small measures for saving energy. The real success of this project is that it resulted in a change of regional policy through the inclusion of a priority in the county social services plan for the period 2015-2020 by which a system of energy advice will be developed and set-up targeting individuals at risk of energy poverty. Sisak-Moslavina County is one of the counties most affected by poverty which implies energy poverty too. Key stakeholders from Petrinja – representatives of the City, the Centre for Social Welfare and public media – were introduced to the idea of energy poverty and its influence on different aspects of the life of citizens and community.

Although energy poverty as a subject is growing in importance over the past few years, there is still no clear definition of the term nor agreed method to identify and monitor of energy poverty.

The project has produced a detailed research in one of Croatia's poorest regions, Sisak-Moslavina County, mapping out the needs of energy users at risk of energy poverty. In addition the status of national, regional and local regulatory framework and policies were analyzed and potential methods for the protection of users at risk of energy poverty were identified.

A series of round tables with key stakeholders from national, regional and local public and civil sector have helped raising awareness of energy poverty and supported the communication and between key organization and sectors. This new improved cooperation has produced recommendations for the inclusion of energy poverty in strategic documents at regional level and a change in regional policy was implemented.

The total project value is approximately 100.000 EUR and it was financially supported through national budget and the European Social Fund (ESF).

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labelling
- Number of households with improved energy consumption classification: 80
- Number of households engaged in support programmes: 80
- (%) Reduction of annual primary energy consumption in public buildings
- (kWh) Annual energy savings in households: 700 x 80 = 56.000 kWh
- (%) Reduction of the use of fossil fuels in the building sector
- Other: Change of regional policy

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

80 households were equipped with simple low-cost energy efficiency measures (ca. 100 EUR investment per household: LED light bulbs, reflexive foils behind radiators, thermometers, rubber draft proofing for windows, aerators for water taps, switch electrical cables, timers for electrical boilers, draft proofing for below doors); all households received energy advice on how to rationalize their energy use. Those measures resulted in annual savings of 700 kWh per household.

A significant indicator of success is the change in regional policy. As a result of the project energy advising was added as social service to the regional Plan of development of social services in Sisak-Moslavina county with direct link to the national Operational programme delivering ESF.

About 18 ton CO<sub>2</sub> annual reduction, average building surface 57m<sup>2</sup> affected, overall perception of improvement of quality of life as result of independent evaluation, average 400HRK (ca. 50 EUR) annual decrease estimate of energy bills per household.

#### EVIDENCE OF SUCCESS

Improving the energy efficiency of dwellings and of household appliances, while improving the heating and ventilation systems is the only effective and sustainable approach to alleviating energy poverty in Balkan countries. By testing simple and low-cost energy efficiency measures it was proven that with low investments significant improvements in the quality of life coupled with energy and emissions reductions can be achieved.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Field visits have been implemented by volunteers, so **securing enough volunteers** and providing adequate training has to be planned in advance.

Key to success is local and national **political will**. Lack thereof most certainly will hamper sustainability.

**Cooperation between and capacity building of key stakeholders** from public and civil sector is essential for the introduction of energy advice as social service.

#### TIME REQUIRED TO COMPLETE THE BP

14 months

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

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##### ORGANIZATION

Society For Sustainable Development Design (DOOR)

##### TYPE OF ORGANISATION

NGO

##### WEBSITE

[www.door.hr/portfolio/znanjem-do-toplog-doma/](http://www.door.hr/portfolio/znanjem-do-toplog-doma/)

— GOOD PRACTICES FOR REGION

# JÄMTLAND HÄRJEDALEN REGION



REGION JÄMTLAND HÄRJEDALEN



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

The Climate Step

**PARTNER REGION**

Region Jämtland Härjedalen, Sweden

**LOCATION DATA**

Sweden

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- New financial instruments

**DESCRIPTION OF THE PRACTICE**

The main purpose of the financial support “The Climate Step” is to reduce emissions that affect climate change.

The financial support can be used in all areas that affect climate change for example; infrastructure, waste management, transport, information campaigns, energy efficiency, reduction of gas emissions, charging stations, energy conversion in buildings and production of biogas.

The company or organization applying for the support provides the largest part of the investment. The Climate Step´s part of the funding is on average 42%.

Every coin invested should provide the greatest possible benefit to the climate. That means that calculating the climate benefits are a decisive factor for the measures that can be supported. The calculation shall demonstrate how GHG emissions changed by the action. The Environmental Protection Agency has presented methods of calculation and guidance on life lengths of different measures.

The county administrative boards support and guide those who wish to apply in each county. County Board will also contribute with their knowledge of the conditions, plans, programs and strategies that are relevant.

**Objective/challenge addressed**

Reduce the climate impact by providing investment support to measures that are not profitable without support.

**Main stakeholders/target groups**

All companies / organizations besides individuals can apply for support.

**Financial resources required**

The support was introduced during 2015, about €12 million where distributed. An additional 60 million euros will be granted per year during 2016, 2017 and 2018.

**Legal framework**

Aid for environmental protection may be granted in accordance with the so-called Block Exemption Regulation (Commission Regulation (EU) No 651/2014).

Support to lesser extent can be given in accordance with the so-called minimum regulation Commission Regulation (EU) No 1407/2013).

**Regional context**

The initiative builds on the climate and energy strategies which worked out at local and regional level. The application must connect to regional objectives.

**STRENGTHS**

- Process from application to completion of measure can be relatively fast.
- Simple application process.

**Weaknesses/Lessons learned**

A development proposal by the county administrative boards is an analysis of how The Climate Step to a larger extent can contribute to measures that support longer term energy change. The analyses can be a matter of social structures linked to resource efficiency, but also consumption and behaviour.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labelling.
- Number of households with improved energy consumption classification.
- Number of households engaged in support programmes.
- (%) Reduction of annual primary energy consumption in public buildings.
- (kWh) Annual energy savings in households.
- (%) Reduction of the use of fossil fuels in the building sector.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The Climate Step is expected to reduce emissions that affect climate by approximately 600.000 tons per year. The Climate Step is estimated thereby achieving 10 percent of the gap that remains to achieve the Swedish climate targets in 2020.

#### EVIDENCE OF SUCCESS

So far estimated Climate The step of having contributed 403.000 ton CO<sub>2</sub> reduction equivalent greenhouse gas emissions from 48.000 petrol-driven cars that go a lap around Earth.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Organisational differences.
- Differences in energy prices and taxes which affect the payback time for action. Sweden has cheap renewable electricity and a high tax on carbon dioxide.

#### TIME REQUIRED TO COMPLETE THE BP

2-6 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**ORGANIZATION**  
Environmental Protection Agency

**TYPE OF ORGANISATION**  
Public/private, regional/local government, etc

**WEBSITE**  
[www.naturvardsverket.se/klimatklivet](http://www.naturvardsverket.se/klimatklivet)



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Energy mapping grant

### PARTNER REGION

Region Jämtland Härjedalen, Sweden

### LOCATION DATA

Sweden

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments

### DESCRIPTION OF THE PRACTICE

SMEs with an energy consumption exceeding 300 megawatt hours (including transport) per year can get a grant for energy mapping. Farms with at least 100 animal units are also eligible to apply.

The grant covers 50 percent of the cost, maximum 50.000 SEK (about 5.000 euro). An energy mapping report shows how the energy is distributed in different parts of the business (including transport) and what the annual costs for energy are. The energy mapping report must include suggestions of measures, it usually shows expected investment costs and payback time for each measure.

Energy consultants can perform the energy audit and write the mapping report, but if the company has similar expertise in-house, they can get the grant and make the mapping themselves.

Once the company has completed the energy mapping and decided on the measures to be implemented is time to report to the Energy Agency; economy report, energy consumption, energy plan etc.

The grant is provided on a national level, but is combined with information activities at a local level through the regional energy agencies. All figures and numbers in this description come from the national level. The regional energy agencies spread information about the grant and helps/guides companies through the process of applying for the grant and moving on to action.

An energy mapping grant was available during 2010-2014. Approximately 1.000 companies applied for the grant, of which about 780 completed an approved energy mapping report. The Swedish Energy Agency now provides this support for a second time.

### Objective/challenge addressed

Contribute to efficient use of energy and reducing the use of fossil fuels. Helping companies find profitable energy efficiency measures. Raising the issue of energy at companies.

### Main stakeholders/target groups

SMEs

### Financial resources required

State cost: 3.000.000 – 4.000.000 Euro

### Legal framework

Sweden has a law on energy audits for large companies. The law is a part of the efforts to meet the requirements of the EU energy efficiency directive. According to the law, large companies have an obligation to make quality assured energy audits at least every four years. However, this grant targets SMEs, a group that is not covered by that law.

### Regional context

The project contributes to sustainable regional growth as companies become aware of measures leading to better energy efficiency with reduced energy consumption as a result.

The project has established important contacts between companies and energy agencies in each region. Energy agencies have a continued dialogue with many of the companies that took part of the grant during 2010-2014.

### Strengths/weaknesses

- It is necessary to inform companies about the grant, being challenging sometimes to convince management to apply for the grant.

- Companies receive a good overview of their energy consumption.
- The energy issues are raised.
- The companies are aware of any previously unknown “energy thieves”.
- With the support of the report, the company has better opportunities to work more systematically with energy issues and make a good priorities scale among measures.

### Lessons learned

A number of areas for improvement were identified when the funding period of 2010-2014 were evaluated. These experiences have formed a basis for the work of the new grant period.

For example; efforts need to be made so that the application and reporting are perceived as simple to the businesses and to raise the quality of conducted energy mapping reports. There is also a clear intention that companies will eventually begin to work systematically and structured to reduce its energy consumption.

In addition there was a need for better marketing of the grant.

Various information and knowledge-related effects of the aid seems to be most significant for companies, such as improved basis for decision, increased knowledge and a more engaged leadership.

The companies have experienced a high administrative burden and in connection with the application and reporting. Competent consultants are important for a successful energy audit. Some companies wished that there was a list of approved consultants.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- (kWh) Annual energy savings in households.
- Other: Reduction on energy consumption by an average of 10 % among participating SMEs.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Survey results indicate that most respondent companies experience that they have gained a greater knowledge. The vast majority of companies that responded to the evaluation surveys stated that they will carry out more measures in the future.

The support seems to have had a significant knowledge-enhancing effect on the companies, stated that they would not have conducted an energy mapping without the grant. The grant also appears to some extent contribute to greater systematic work on energy efficiency.

The companies seem to be more willing to hire consultants. The support seems to have been important for the company that would have done the survey, even without aid. The support has accelerated and intensified the process.

#### EVIDENCE OF SUCCESS

The Energy Agency made an evaluation of the assistance. Estimated costs of measures and measure planned savings companies reported to the Swedish Energy Agency to obtain their energy survey check indicates a very high profitability for the planned measures.

Most of the companies that took part of the grant during 2010-2014 have annual energy consumption between 1500 and 5000 MWh. They reduced their energy consumption by an average of 10%.

The Swedish Energy Agency now offers this grant for the second time.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Please indicate problems or barriers that could appear when transferring the good practice to other partner.

- If there are no energy agencies to support the businesses.
- If businesses have obvious energy-saving measures and do not need help to choose between these.

#### TIME REQUIRED TO COMPLETE THE BP

4-6 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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(Swedish Energy Agency)

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**ORGANIZATION**  
Swedish Energy Agency

**TYPE OF ORGANISATION**  
Public energy agency

**WEBSITE**  
[www.energimyndigheten.se/nrp/stod-for-energikartlaggning-i-sma-och-medelstora-foretag/](http://www.energimyndigheten.se/nrp/stod-for-energikartlaggning-i-sma-och-medelstora-foretag/)



## REGION JÄMTLAND HÄRJEDALEN



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Heating control with forecast

### PARTNER REGION

Region Jämtland Härjedalen, Sweden

### LOCATION DATA

Östersund, Region Jämtland Härjedalen

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Innovation

### DESCRIPTION OF THE PRACTICE

Controlling buildings heating based on weather forecast that calculates how much energy to be supplied to a building, based on very local weather forecasts. In this case, the technology has been used for heating control, but it can also be relevant to comfort cooling.

When the weather changes, easily arise difficulties in maintaining the desired indoor temperature. For example, a transition from a cold night to a clear day with high solar contribution through the windows often results in a too high temperature indoors.

One of our stakeholders, *Östersundshem* (municipal housing company), has tested controlling heating of buildings based on forecasts. The technology calculates how much energy to be supplied to a building, based on very local weather forecasts. In this case, the technology has been used for heating control, but it can also be relevant to comfort cooling.

Practical application of forecast control generally use remote-controlled forecast receivers that send and receive data over GPRS or GSM network. The forecast receiver in turn controls the controllers placed in the building and regulate the heat distribution. Östersundshem tested two methods in two identical buildings, manual control with weather forecasts and automatic control with weather forecasts.

### Objective/challenge addressed:

Reduce unnecessary energy use through improved control.

**Main stakeholders/target groups:** Real estate companies, housing companies, SMEs.

**Financial resources required:** Start-up costs; 2.000 Euro.

### Strenghts/weaknesses

- Energy savings of 10-20 kWh / m<sup>2</sup>.
- Up to 9% energy savings in buildings.
- More consistent indoor climate.
- Reduced environmental impact.

### Lessons learned

Manual control requires time and planning. It is difficult to make reliable analyses of the weather in advance. However, it can work on a small number of properties. It is most profitable to start with those buildings with the highest energy consumption. It may be a bit messy to install a reference sensor. It's best to do it in connection with another renovation.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- **Other:** Up to 9% energy savings in buildings.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

More consistent indoor climate / reduced energy consumption.

### EVIDENCE OF SUCCESS

#### Results:

- 9% Energy savings with automatic control. (4.000-5.000 euro savings per alley) compared to:
  - 5% Energy savings with manual control.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

Jämtland Härjedalen has a cold climate, other regions may have lower savings potential, but it can possibly be used with cooling systems as well.

### TIME REQUIRED TO COMPLETE THE BP

1-2 years

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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Karin Österberg

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**ORGANIZATION**  
Östersundshem

**TYPE OF ORGANISATION**  
Municipal housing company

**WEBSITE**  
www.ostersundshem.se



## REGION JÄMTLAND HÄRJEDALEN



### GOOD PRACTICE FICHE

#### TITLE OF THE GOOD PRACTICE

Grant for municipal Energy and Climate Advisors

#### PARTNER REGION

Region Jämtland Härjedalen, Sweden

#### LOCATION DATA

Sweden

#### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments

#### DESCRIPTION OF THE PRACTICE

All Swedish municipalities can apply for a grant for a municipal Energy and Climate Advisor. The grant has been existing for most of the past 40 years. The size of the grant and the assignments for the advisors has evolved over the years as energy issues in society has changed.

The advisors target group consists of: SMEs, organizations and individuals. The advisors provide information on relevant energy efficiency measures, technical solutions and relevant investment aids available. The advisors also provide information on renewable energy production and transport issues. The advisors have knowledge about regional conditions.

The advisors consult those who seek help, but also actively contact energy intensive target groups offering advice. The service is free of charge and commercially independent. The regional energy agencies coordinate the advisors.

The grant is provided by the Swedish Energy Agency. The size of the grant is 28.000 – 43.000 euro/year depending on the number of residents in each municipality. Many municipalities are small and it is common that the grant covers approximately a 40% service.

#### Objective/challenge addressed

Contribute to efficient use of energy, reducing the use of fossil fuels and increasing the production of renewable energy.

#### Main stakeholders/target groups

Municipalities can apply for the grant but target groups are households, SMEs and organizations.

#### Financial resources required

28.000 – 43.000 euro per municipality

#### Regional context

The advisers communicate regionally and locally adapted information to the target groups. It opens ways for improved energy efficiency in society when citizens act with greater knowledge, increasing awareness creates better conditions for other policy instruments to be accepted and work better.

#### STRENGTHS

- The grant is available for all the municipalities.
- Local connection: the advisory service is managed by local authorities.
- The energy and climate advisors form several networks, on national, regional and local level for collaboration, exchange of experiences and expertise.
- The advisory is performed in form of a project, often a year or two at a time. This allows the Swedish Energy Agency to direct the advisory to priority issues.
- Broad expertise and broad mission.
- Contributes to energy and climate competence in each municipality.

#### WEAKNESSES /LESSONS LEARNED

- It can take a long time from consultation to action, sometimes several years. This makes it difficult to monitor the effects of the advice.
- Since the aid will not cover a full-time service, the energy and climate advisors often have other duties as well. In some municipalities this has caused that the advisory is not done in a good way, other tasks have been given priority. The advisory is often more effective when it is coordinated by several municipalities.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Other: Increased knowledge about energy efficiency measures among the target group.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

There are difficulties in estimating the effect of the energy and climate advisory because it can take a long time from the moment of the advice until a measure is taken.

The theoretically possible energy savings potential in residential houses is very high. Today the approximately 140 TWh per year in the residential and service sector, of which 70 TWh consists of electricity. Electricity is a high quality energy form that can be used for so many different purposes, therefore it is not considered optimal to heat buildings with electricity even if it is renewable.

#### EVIDENCE OF SUCCESS

The main success factors is the credibility of the independent advice, the national coverage with a local base that constitute a channel for the various efforts energy efficiency and reduced environmental impact, as well as the broad and good the skills of the advisers.

A survey conducted by Statistics Sweden on behalf of the Swedish Energy Agency shows that public awareness on energy and climate advice is about 30% of single-family owners and about 18% have been in contact with the energy and climate advisors. Once the information arrives through the advisers, a third of the single-family owners say that it have affected in their investment decisions in fairly large degree. In the same survey by Statistics Sweden, it appears that almost 70% of single-family owners think that access to independent energy and climate advice is very important or rather important.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

If there are no regional energy agencies, it can be difficult with regional coordination. Requires annual investments, and it's difficult to follow up the effect in quantitative ways.

#### TIME REQUIRED TO COMPLETE THE BP

2 or more years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### ORGANIZATION

Region Jämtland Härjedalen

##### TYPE OF ORGANISATION

Public, region

##### WEBSITE

[www.energirad.se](http://www.energirad.se)

[www.regionjh.se](http://www.regionjh.se)



## REGION JÄMTLAND HÄRJEDALEN



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Smart procurement

### PARTNER REGION

Region Jämtland Härjedalen, Sweden

### LOCATION DATA

Östersund, Region Jämtland Härjedalen

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments

### DESCRIPTION OF THE PRACTICE

The municipal housing company Östersundshem has used a new strategy for the procurement of new construction projects. Instead of demanding absolute energy demands for new buildings or requesting specific technical solutions, they place a maximum energy demand, for example max 70 kWh/m<sup>2</sup>/year.

Östersundshem takes 50 years of energy consumption from each considered option taken into account when the best available option is evaluated.

In this procurement, strategy entrepreneurs can give tenders based on their best practice. This model gives the entrepreneurs a chance to be innovative, and Östersundshem get a long-term view on energy consumption and costs. This method could be applied to renovations.

### Objective/challenge addressed

Get the best possible energy alternatives in the procurement of new buildings. Stimulating innovation in the construction market.

### Main stakeholders/target groups

Construction companies and the client, in this case a municipal housing company.

### Financial resources required

Time to change the procurement strategy

### Regional context

We believe that the model can be implemented in many regions. Perhaps it may drive the implementation of new technologies in rural areas, where it can sometimes take longer before the new technology is established.

### Strengths/weaknesses

It may require a lot of knowledge and expertise to evaluate the various options and their technical solutions.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Please tick at least any of the self-defined performance indicators in the Application Form (related to Policy Instruments) that may apply to the good practice.

- (kWh) Annual energy savings in households
- (%) Reduction of the use of fossil fuels in the building sector

### FACTORS THAT MIGHT HAMPER THE TRANSFER

Transferability depends on procurement legislation. Nevertheless, the Public Procurement European Directive harmonizes the different National approaches to public procurement and, this way is helpful for this GP transfer.

### TIME REQUIRED TO COMPLETE THE BP

Less than 1 year

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

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#### ORGANIZATION

Östersundshem

#### TYPE OF ORGANISATION

Municipal housing company

#### WEBSITE

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REGION JÄMTLAND HÄRJEDALEN



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Energy wise housing cooperatives

**PARTNER REGION**

Region Jämtland Härjedalen, Sweden

**LOCATION DATA**

Jämtland Härjedalen and Västernorrland

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty

**DESCRIPTION OF THE PRACTICE**

The project's aim was to reduce energy consumption in buildings, specifically housing associations in the counties of Jämtland and Västernorrland. This was done through joint actions of the two counties' energy agencies and the work performed by the energy and climate advisors.

The objective of the project is to achieve reduced energy consumption in buildings through increased knowledge of energy matters and a systematic energy work in the housing associations

The project has included activities such as participation at meetings, energy information, project meetings/awareness-raising activities for the participants with different themes, counseling visits, collection of energy statistics and writing proposals for action.

The visit by the energy advisor has been appreciated and unions have received practical tips on energy efficiency measures.

**Objective/challenge addressed**

Reduce energy consumption in buildings through knowledge enhancing measures.

**Main stakeholders/target groups**

Housing cooperatives in the county of Jämtland Härjedalen and county of Västernorrland.

**Financial resources required**

It was funded by the Swedish Energy agency and the budget was about 125,000 euros.

**Timeline**

The original timeline for the project was one year, January to December 2014, but it was prolonged to March 2015 in order to reach the desired results.



**Regional context**

Housing cooperatives in Sweden (also called tenant-owner's association) is a joint ownership of property in which the whole property is owned by a co-operative association, which is owned by the members. Housing cooperatives represent a large share of all housing in Sweden, 23% to be more precise. Housing cooperatives were identified as an interesting group to work with; they have great potential for energy efficiency and they typically lack the knowledge to make informed decisions themselves.

**Strengths/weaknesses**

- Discussing energy measures with an impartial energy and climate advisor were much appreciated. As the advisors are not trying to promote a certain technology or product, the cooperatives can trust the advice given.
- Housing cooperatives typically have high energy savings potential.

**Lessons learned**

A lesson from the project is that it may take quite a long time from idea/proposal for action to implementation. For example, it may take time for the board of the associations to make decisions. The project has nevertheless helped to speed up the process to make visible actions and many ideas have been raised about the potential for saving energy and saving money.

Also, it takes some time and effort to recruit cooperatives. The board members typically have limited time to spare and the knowledge level and interest may be low, resulting in low interest for the project.



#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- (kWh) Annual energy savings in households: 1.130.000 kWh / year
- Number of households engaged in support programmes: 1486.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- 34 cooperatives signed up
- 27 cooperatives identified profitable measures
- 1486 apartments were included through their cooperatives
- Large and small cooperatives participated; 3-256 apartments
- The total energy savings of 1,130 MWh/year
- Funding/Energy saved ratio: 110 €/MWh during the project

#### EVIDENCE OF SUCCESS

- Many cooperatives developed long-term energy plans
- **Visits from energy and climate advisors were much appreciated.** They provided easy to understand and hands on advice
- Both boards and members of the cooperatives were offered energy education
- The survey distributed to members resulted in important suggestions that the cooperatives could work with.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

Depends on the form of housing cooperatives existing in receiving region.

#### TIME REQUIRED TO COMPLETE THE BP

2-3 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

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Region Jämtland Härjedalen

##### TYPE OF ORGANISATION

Regional development agency

##### WEBSITE

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#### FICHE COMPLETED ON DATE

2017-07-07



## REGION JÄMTLAND HÄRJEDALEN



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

**Zerooil – with bio oil – a region without fossil heating oil**

### PARTNER REGION

Region Jämtland Härjedalen, Sweden

### LOCATION DATA

Jämtland County, Sweden

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- Innovation

### DESCRIPTION OF THE PRACTICE

*Switch from non-renewable to renewable energy*

#### Kind of the practice

The project “Zerooil – with bio oil” offered actors within the region consultancy support, arranged study visits that increased knowledge and interest, pairing suppliers with potential customers. And at the very least the project raised the question of this possibility of switching to renewable fuels.

The aim of “Zerooil – with bio oil” was to create regional co-operation to deliver bio oil in such amounts that also small users can reach profitability. Secondly, the aim was to give advice to others concerning conversion from fossil heating oil to other alternatives and upgrade the inventory of the number of fossil heating oil boilers in the county.

Fossil fuels are typically taxed quite heavily, which means that a lot of fossil oil has already been replaced. In some specific cases however (e.g. bio oil for heating), the price for fossil and renewable fuels is quite similar despite fossil taxation. In these cases, public authorities can support projects where cooperation and other driving forces are necessary to reach conversion to renewables.

#### Objective/challenge addressed

To reach necessary amount of bio oil delivered to the Jämtland County.

#### Main stakeholders/target groups

Main target group were district heating companies, industries and public property owners. Secondly others that use heating oil and fuel providers.

#### Financial resources required

The budget for the project was approximately 42,000€. The project was financed by the Region Jämtland Härjedalen during 2015-2016.

#### Legal framework

The development within this field is mostly driven by the taxes on fossil heating oil in Sweden. The taxes has increased during the last years, more for industries than for others, and that has in turn made it more interesting to find alternatives that also is more friendly for the climate.

#### Regional context

The vision of Jämtland County is to be a region with no fossil fuels by 2030. That means that use of fossil heating oil has to be at a minimum. Bio oil is one alternative that can make that possible.

#### Strengths

We have reached and based the project on regional cooperation.

#### Weaknesses/Lessons learned

We could have come further concerning smaller boilers

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Identified possible users of bio oil in Jämtland County.

Given individual advices concerning bio oil at 10 companies, where the energy and climate advisors participated at on-site visits. Five of those have made plans for conversion.

Had three meetings concerning regional cooperation.

Given individual advice to about 20 companies concerning other alternatives for fossil fuels.

Updated the inventory concerning numbers of larger oil boilers. Larger than 50 kW.

- (%) Reduction of the use of fossil fuels in the building sector: **93%**

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Deliveries of fossil heating oil to Jämtland County was in the year of 1990 about 45.000 m<sup>3</sup>. That number has decreased to 3.200 m<sup>3</sup>, a decrease about 93%. That is a very good and fast development, although it still needs to speed up.

During the project one site converted to bio oil, with the capacity of 10m<sup>3</sup>. At the time of writing more sites have converted, with capacities of several hundred m<sup>3</sup>.

#### EVIDENCE OF SUCCESS

Our inventory shows that the number of oil boilers compared with the year of 2014 has decreased from 310 to 265 and smaller boilers have decreased from 449 to 292. The oil boilers that have disappeared have been replaced by a variety of options, most have installed heat pumps, but many have also switched to biofuels (e.g. wood pellets) and district heating.

In December 2016 bio oil was delivered to a site in Östersund. That was a good end point for the project.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- There is a discussion about how sustainable bio oil is. That can differ depending on which raw material that is used. Development within this will be extremely important to follow.

#### TIME REQUIRED TO COMPLETE THE BP

Approximately 6 years, 2014 - 2020

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**ORGANIZATION**

Region Jämtland Härjedalen

**TYPE OF ORGANISATION**

Regional government

**WEBSITE**

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#### FICHE COMPLETED ON DATE

2017.05.31



## REGION JÄMTLAND HÄRJEDALEN



### GOOD PRACTICE FICHE

#### TITLE OF THE GOOD PRACTICE

Energy Efficiency Support (EES)

#### PARTNER REGION

Sweden

#### LOCATION DATA

Region Jämtland Härjedalen

#### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Professionalization of the construction sector
- Innovation

#### DESCRIPTION OF THE PRACTICE

To reach the desired two degrees target on CO2 emissions effect, Sweden will have to increase the energy efficiency by reducing 20% the energy consumption by 2020. To do so, the public sector should act as a model, which is why the Swedish Energy Agency offered an economic contribution between 2010 and 2014 to municipalities and county councils for increasing energy efficiency in their own premises

The Energy Efficiency Support (EES) was part of a national program managed by the Swedish Energy Agency, which amounted to SEK 99 million (ca. 10M€) per year. The EES was available for municipalities and county councils that undertook to work actively with energy efficiency.

Those who applied for the support undertook to:

- Establish a strategy for energy efficiency and actively work to implement this. The strategy should include a zero-position analysis, goals and an action plan.
- Carry out at least two of the six actions described in Annex VI to the EU Energy Services Directive. This means, for example, buying energy-efficient products or renting / using energy-efficient buildings.
- Annually report the effects of energy efficiency efforts to the Energy Agency.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- **Energy consumption in public buildings** reduced by on average 8% 2009-2014

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Other positive effects are:

- Better indoor climate and behaviour.
- Raising awareness on use of energy among public workers and citizens.
- Exemplary role by the local public authorities.
- Many municipalities stated that they ended up saving money through the work methods they had started, which is why many continued after the funding was exhausted.

#### EVIDENCE OF SUCCESS

The reduction in energy consumption can be attributed to that local government has prioritized energy issues higher than before.

#### TIME REQUIRED TO COMPLETE THE BP

-

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

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##### ORGANIZATION

Swedish Energy Agency

##### TYPE OF ORGANISATION

Public energy agency

##### WEBSITE

[www.energimyndigheten.se/nrp/stod-for-energikartlaggning-i-sma-och-medelstora-foretag/](http://www.energimyndigheten.se/nrp/stod-for-energikartlaggning-i-sma-och-medelstora-foretag/)

#### FICHE COMPLETED ON DATE

September 2017



REGION JÄMTLAND HÄRJEDALEN



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Education close to zero energy constructions: “Energy lift”

**PARTNER REGION**

Region Jämtland Härjedalen, Sweden

**LOCATION DATA**

Östersund, Jämtland County, Sweden

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

The zero energy housing rising awareness has pushed the construction industry to work against much more energy efficient house buildings. However, the sector needs expertise, knowledge and know-how in the energy field. To respond to these professional requirements, the Swedish Energy Agency developed a kit of education programs, aimed at different groups in the value chain. These programs are financed by the Agency.

The Agency's competence enhancing efforts are aimed at clients, engineers, architects, construction project managers, consultants and technical managers. Energy Offices coordinate the education to disseminate knowledge about energy-efficient construction and renovation and raise awareness and knowledge regarding the forthcoming demand for near-zero energy buildings.

**PROJECT BACKGROUND**

This is an effort from the Swedish Energy Agency to prepare the construction sector for future requirements for near-zero energy buildings (NNE standard), which will be implemented gradually by 2021 in private buildings. In order to achieve Sweden's energy and climate goals, major efforts are made on energy efficiency and increased use of renewable energy. All new buildings must have very low energy consumption. At the same time, energy use in existing buildings must be drastically reduced. In order to promote low energy building, all actors in the construction industry are aware of the energy goals and understand how their work affects the performance of the building's energy performance.

**TRAINING**

The education intends to provide a holistic view of the construction process linked to low energy building in terms of new production and renovation. The education curricula explains what differences involves building and renovating low energy buildings in comparison with conventional buildings. The Energy Agency's knowledge-enhancing efforts are seen as an increase in knowledge based on the fact that each occupational group in the target group has basic knowledge in property management, construction processes, construction and installation technology and the building's energy performance, but that a competence increase is needed in the construction of low energy houses or in the energy renovation of buildings.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

Total number of participants:

- 1643 people are registered on the web course.
- 749 people have attended at least a seminar.
- 352 people have completed their course certificate.

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

Through increased knowledge of low energy building in all stages of the construction process, work will start faster to build energy-efficiently.

**EVIDENCE OF SUCCESS**

People through all stages of the construction process have participated. Information and working methods are spreading. This will make it easier for us to reach the goal of close to zero energy housing 2019 resp. 2021.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

What can prevent from a fast shift to energy efficiency building is traditions and habits. It does not look like a greater risk when so many have gone to education and general energy savings are on Sweden's agenda.

**TIME REQUIRED TO COMPLETE THE BP**

Approximately 6 years, 2014 - 2020

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

**CONTACT NAME**

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**ORGANIZATION**

Swedish Energy Agency

**TYPE OF ORGANISATION**

Public energy agency

**WEBSITE**

[www.energimyndigheten.se/nrp/stod-for-energikartlaggning-i-sma-och-medelstora-foretag/](http://www.energimyndigheten.se/nrp/stod-for-energikartlaggning-i-sma-och-medelstora-foretag/)

**FICHE COMPLETED ON DATE**

September 2017



## REGION JÄMTLAND HÄRJEDALEN



### GOOD PRACTICE FICHE

#### TITLE OF THE GOOD PRACTICE

Sports Tech Research Centre

#### PARTNER REGION

Region Jämtland Härjedalen

#### LOCATION DATA

Jämtland Härjedalen

#### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Innovation

#### DESCRIPTION OF THE PRACTICE

The Sports Tech Research Centre is a multidisciplinary research centre that focuses on applied science of sports engineering and product development. The research is primarily within the fields of innovative development of and verification of products, material, technology and methods in the field of sports and outdoor activities. Some activities are also within the field of additive manufacturing (3D printing), in e.g. material/process development.

Activities are within one of the university's focus areas "Forests and mountains as resources for business and quality of life". The research areas can be divided into three groups:

- Biomechanics and Performance Optimization.
- Human and Equipment Interaction.
- Additive Manufacturing and Materials.

The research covers a wide range of topics, from basic research on snow friction to active protective safety devices lowering injuries in sports. Multidisciplinary research teams are formed to address research questions in the best way. Research qualification ranges from mechanical engineering, materials engineering, electrical engineering, design, product development, manufacturing engineering, software and computer engineering, sports technology to the physiology, medicine and surgery.

On site there are several technically advanced laboratories, some of which are world leading, e.g. a wind tunnel, materials testing lab, labs for additive manufacturing (3D-print) and applied mechanics as well as movable labs for studies in the field. The labs are excellent environments to conduct research, as well as being important resources for the university's engineering programs and outside partners. Through corporate collaboration companies and organizations can get help from researchers and students to develop and test products and materials.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Assessment made in 2013 "ARC13 – Assessment of Research and Coproduction at Mid Sweden University":

	Number	Scientific impact factor	Citations	Others
Articles	86 (8 in 2007 --> 28 in 2011; strong progression)	2>5 - 11>4 - 18>3 41>2- 20>1 - 15<1 7 noIF --> Large panel, high mean	252 (55,5 in 2010)	3,84 authors /paper 1,59 countries /Pap --> Reflect international collaborations
Conferences		80		
Communication		Very good communication ranging from local to international medias (TV, journal...) --> strong visibility		
Tools development		7 Ergometers for upper and lower limbs, some specific for disabilities, 1 ski simulator, jumping machine		
Contribution to products innovations		Suit for warm and humid environment, smartphone movement application for skier, alpine helmet, cross country poles		
New process		Computerized biofeedback system, concept to reduce body mass/fat, waxing iron application		

#### EVIDENCE OF SUCCESS

The research centre has a clear, visible identity, and is well integrated both socially and economically with strong collaboration with industry and local development. It is one of the best in its field globally. The scientific production has increased exponentially from 2007, with outputs achieving good impact factors.

#### TIME REQUIRED TO COMPLETE THE BP

-

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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**ORGANIZATION**

Mid Sweden University

**TYPE OF ORGANISATION**

Public/private, regional/local government, etc

**WEBSITE**

[www.miun.se/en/sports-tech-research-centre/](http://www.miun.se/en/sports-tech-research-centre/)

#### FICHE COMPLETED ON DATE

2017.09.25

# — GOOD PRACTICES FOR REGION **SLOVENIA**



## REGION SLOVENIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

CHP Planina – Kranj

### PARTNER REGION

Slovenia

### LOCATION DATA

City Municipality Kranj

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- New financial instruments

### DESCRIPTION OF THE PRACTICE

Planina in Kranj has become in mid-March 2012 its intention to officially handed over completely renovated boiler room, modern way of producing energy, increasing the energy efficiency of existing energy sources and offering cheaper heating for residents of the neighbourhood. Project of complete renovation of the district heating neighbourhoods Planina also included the construction of combined heat and power (CHP) and represents one of the biggest energy projects in the area of Gorenjska and with this new chapter in efficient energy use and energy efficiency in the Gorenjska region.

Investor of the project of construction of the CHP, the company was Soenergetika with the cooperation of the Municipality of Kranj and civil initiative, founded the company Elektro Gorenjska (later involved in the project Gorenjska power stations), HSE, Domplan and Petrol. The project was designed on the basis of concern for the protection of the environment, optimizing and increasing the efficiency of energy and the reduction of heating costs residents of the neighbourhood. Its objectives are to provide for more efficient use of energy and end-users boiler enable savings.

### The project brings environmental and financial benefits

The entire renovation project, which included further modernization of thermal stations and optimization of district heating network and the replacement of two boilers, was completed in just over two years since the signing of the contract. This boiler Planina become a modern boiler is fitted with the latest technology from the standpoint of optimal, especially rational production and distribution of heat and its leadership and management. For the overall system of boiler Planina, it was in fact made common central monitoring system, through which guided production of heat and electricity.

The value of the total investment amounted to more than 5.8 million €, of which four million earmarked for the construction of CHP. This project is a neighbourhood Planina acquired one of the most modern boiler district heating in the Slovenian area, allowing many operational reliability at significantly lower cost and minimal environmental impact. Renewed boiler residents of the neighbourhood Planina delivers 24 percent lower heating costs, which will be accounted as a discount on annual heating costs of EUR 250.000€.

Placement CHP plants was necessary to conduct a comprehensive renovation of the boiler room and a district heating network. Replacement and installation of boilers to the appropriate location was obtained with adequate space for the installation of CHP units and provided the corresponding parameters of the emissions of combustion on the basis of existing legislation. For the purposes of optimization of losses and placement CHP was also carried out rehabilitation of the district heating system, it was necessary to ensure proper temperature return water. It has also been replaced regulation equipment at the thermal stations for hot water at low and high pressure. A system of remote monitoring and control of implementation tools for the efficient conduct of the district heating system.

CHP Planina has the boiler room with two gas engines that produce both electricity and heat. One of the engines has the power of 1 MW and is operating throughout the year and covers the need for hot water, another motor power of 3.3 MW covers peaks and operates only during the heating season.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- (%) Reduction of annual primary energy consumption in public buildings.
- (%) Reduction of the use of fossil fuels in the building sector.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Project CHP also has a large environmental impact, as it will cut CO<sub>2</sub> emissions by 12.000 tons per year.
- The investment in CHP will be repaid in six years (investment more than 5.8 million €, of which four million earmarked for the construction of CHP).
- -24% heating costs.

#### EVIDENCE OF SUCCESS

Technological solutions based on better use of energy gas and the simultaneous production of electricity. The total indicative annual energy output is 21.7 million kWh, which is sufficient to supply 5.400 households own investment in CHP should be the investor repaid in six years.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Consent of owners,
- Building permit,
- Finances.

#### TIME REQUIRED TO COMPLETE THE BP

3 years

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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##### TYPE OF ORGANISATION

Public/private, regional/local government, etc

##### WEBSITE

[http://www.domplan.si/files/dokumenti/energetika/brosure/spte\\_planina\\_kr.pdf](http://www.domplan.si/files/dokumenti/energetika/brosure/spte_planina_kr.pdf)



## REGION SLOVENIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Combating energy poverty

### PARTNER REGION

Slovenia

### LOCATION DATA

Slovenia

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty

### DESCRIPTION OF THE PRACTICE

16 students of Secondary Technical and Professional School Trbovlje carried out their yearly practice in the form of energy advices. After a two-day training they started with work visiting households.

The visit included the review of bills for electricity, heating and water consumption analysis of electrical and electronic household appliances, analysis of water usage, inspection of windows and radiators. All this information and data were collected by students and on basis of these data they prepared a set of measures and list of appliances suitable for the household. At the second visit to the household they installed free devices for energy and water consumption savings (energy-saving lamps, seals for windows, water saving appliances for tap and shower, etc.). At the same time households were presented advices for saving energy and water, and gave additional information on how or where to get additional help or advice. Complete services, including small devices for savings, were free of charge for the household. Students have visited about 80 households average savings in households amounts to approximately EUR 100 per household per year.

The project has been organised by association Focus with participating Municipalities Hrastnik, Trbovlje, Zagorje ob Savi and Center for social work Hrastnik, Center for Social Work Trbovlje, Center for Social Work Zagorje ob Savi, Youth Center Hrastnik Youth Center Trbovlje and Youth Centre Zagorje ob Savi.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households engaged in support programmes,
- (%) Reduction of annual primary energy consumption in public buildings,
- (kWh) Annual energy savings in households.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Average savings in households amounts to approximately EUR 100 per household per year.

### EVIDENCE OF SUCCESS

At the end of the project students expressed their desire to participate in the project next year. Similarly, the desire was expressed by the other involved, so that the energy consulting for the households with low household income would take place in Zasavje in the coming school year.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

Only factor that could hamper the transfer is willingness to cooperate.

### TIME REQUIRED TO COMPLETE THE BP

4 to 6 months

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

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Public/private, regional/local government, etc

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### FICHE COMPLETED ON DATE

30.09.2016



## REGION SLOVENIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Contractual partnership in the building of Municipality of Kranj

### PARTNER REGION

Slovenia

### LOCATION DATA

City Municipality Kranj

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments

### DESCRIPTION OF THE PRACTICE

Due to improvements in building of City Municipality of Kranj convenience of the users of the building in winter and summer is increased. Energy demand for heating and cooling was reduced with cogeneration of heat and electricity and also by 30 kWp photovoltaic power plant placed on the roof of the building. Average annual heat demand of previous years amounted to 826 MWh. A comparison was made for the heating season 2012/13 where was taken into account use of heat measured up to and including the month of February 2013. For the remaining months comparison has been based on calculated approximation of previous years. Expectation is that the use of heat at the end of the heating season is around 590 MWh, which represents approximately 29% reduced heat consumption. Installations were renovated and the central control system and soft measures as education of employees were also introduced. As result all of these measures the need for heating was reduced.

Type of measures	Concessions for the supply of heat and cooling on natural gas from coproduction of heat and electricity, cooling unit, and other use of renewable energy sources Heated area of 6,500 m2 Cooling surface 4,500 m2
Start date for the procurement procedure (publication of contract notice)	2011
Date of contract signature	2011
Year of installation measures	2012
Contract duration	2027
Period of provided guarantees for energy savings	15
Investment volume (mill. EUR)	1.678.300,00 EUR

EPC provider	Petrol d.d.
Implemented measures	Gas boiler, power of 635 kW Central cooling, 250 kW CHP system - 80 kW, heat output - 50 kW Renovation of mechanical installations Air Conditioning meeting halls of power 55 kW Photovoltaic power plant of 30 kWp The central control system
Financing	Petrol d.d.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- (%) Reduction of annual primary energy consumption in public buildings.
- (%) Reduction of the use of fossil fuels in the building sector.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Limited own resources for the investment,
- Increased comfort,
- Lower energy use,
- Renewable energy sources.

#### EVIDENCE OF SUCCESS

- 236 MWh reduction in heat consumption.
- 29% reduced heat consumption.
- CHP system.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Local legislation,
- Investment does not have a positive ROI,
- Technical complexity.

#### TIME REQUIRED TO COMPLETE THE BP

2 years (counting also the process of gathering energy data, preparing legal documents and tenders)

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

Blaža Perpar

##### E-MAIL

blaza.perpar@petrol.si

##### ORGANIZATION

Petrol d.d. Pot na Lisice 7. 4260 Bled. Slovenia

##### TYPE OF ORGANISATION

Public/private, regional/local government, etc

##### WEBSITE

[www.eltec-petrol.si/energetska-upravljanje-objektov/](http://www.eltec-petrol.si/energetska-upravljanje-objektov/)

#### FICHE COMPLETED ON DATE:

30.09.2016



REGION SLOVENIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Eco Fund, Slovenian Environmental Public Fund

**PARTNER REGION**

Slovenia

**LOCATION DATA**

Slovenia

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

Eco Fund is a public fund (owned by the state) specialized in providing financial incentives for environmental investments. Established in 1993, following the example of EU member states leading in sustainable development and green technologies, as one of public mechanisms for environmental policy enforcement. Employing ca. 35 people (public employees).

**Sources of funding**

- for Eco Fund's administrative costs and Eco Fund's loans:
  - Eco Fund's own funds (some funds provided by the state at the time of establishment and later funds as recapitalization; repayments from loans also become own funds of Eco Fund),
  - loans from domestic and international financial institutions.
- for Eco Fund's grants:
  - the Decree on energy savings requirements (providing funds from energy efficiency contributions paid by end users of energy as part of bills),
  - contract providing budgetary sources from the Climate Change Fund administered by Ministry of Environment and Spatial Planning (funds from emission coupons).
- Earmarked assets fund: 111.8 million €
- Reserve fund: 17.2 million €
- Total Balance Sheet Assets on December 31, 2015: 246.2 million €

**Key financial mechanisms**

- Soft loans with favourable interest rates (since 1994)
- Non-repayable subsidies (grants) (since 2008)
- Financing and coordination of Energy Advisory Network (ENSNET) free for households (offices all over Slovenia),
- Financing of awareness-raising activities in the field of environmental protection (conferences, meetings, publications, projects of NGOs etc.

**ECO Fund 2016**

Funds for public calls in 2016 (est.)

- loans: 30 million €
- grants: 52,6 million €

Focus on: the building sector which has the biggest potential for delivering significant and cost-effective GHG emissions reductions (proven policies, technologies and knowledge already exist on the market); therefore, countries should prioritize the building sector as key to meet their national targets on energy efficiency.

**Soft loans with favourable interest rate (3m euribor + 0-1.3 %)**

to households, legal entities and municipalities for various environmental investments:

- air pollution reduction,
- efficient use of energy,
- use of renewable energy sources,
- waste management,
- waste water treatment,
- water supply.

**Non-repayable subsidies (GRANTS)**

- to households for energy efficiency and use of renewable sources of energy in residential buildings:
  - solar heating systems,
  - biomass boilers,
  - heat pumps,
  - connection to district heating on renewable energy sources,
  - energy efficient wooden windows,
  - facade insulations,
  - roof insulations,
  - heat recovery ventilations,
  - new nearly-zero-energy buildings (nZEBs),
  - full retrofits,
  - purchases of apartments in nZE multi-residential buildings (full retrofits),
- to households, legal entities and municipalities for electric cars and public transport (energy efficient buses),
- to municipalities for nearly-zero energy public buildings.

#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling,
- Number of households with improved energy consumption classification,
- Number of households engaged in support programmes,
- (%) Reduction of annual primary energy consumption in public buildings,
- (kWh) Annual energy savings in households,
- Number of households with improved energy consumption classification,
- (%) Reduction of the use of fossil fuels in the building sector.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- number of public calls,
- number of granted loans,
- number of granted non-repayable subsidies,
- Energy savings in GWh per year due to the implementation of energy advices for citizens GWh per year,
- Reduction of greenhouse gas emissions due to the implementation of energy advices for citizens in tCO<sub>2</sub>.

#### EVIDENCE OF SUCCESS

##### 1995 – 2015:

- total of 56 published public calls,
- 17,300 granted loans in the amount of over 451 million EUR,
- 78,400 granted non-repayable subsidies in the amount of over 141 million EUR,
- The majority of applications is from households (which, in Slovenia, are relatively under-indebted and keen investors, especially in buildings).

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Energy legislative is different in each country,
- way of taxation of energy usage is different in each country.

#### TIME REQUIRED TO COMPLETE THE BP

2 years (from the start of the process to having employees and office)

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

-

##### E-MAIL

ekosklad@ekosklad.si

##### ORGANIZATION

Eko sklad, Slovenski okoljski javni sklad. Slovenski okoljski javni sklad. Bleiweisova cesta 30.000 Ljubljana

##### TYPE OF ORGANISATION

Public

##### WEBSITE

[www.ekosklad.si/fizicne-osebe/en-svet](http://www.ekosklad.si/fizicne-osebe/en-svet)

#### FICHE COMPLETED ON DATE

30.09.2016



## REGION SLOVENIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

ENSVET - Energy Advices for Citizens

### PARTNER REGION

Slovenia

### LOCATION DATA

Slovenia

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- New financial instruments

### DESCRIPTION OF THE PRACTICE

Program for the free energy advice for citizens - Network ENSVET offers individual, free, independent energy consulting and information education and awareness activities for the promotion of energy efficiency measures and renewable energy sources for citizens in the local environment.

In offices spread across Slovenia network ENSVET, are employed qualified independent energy advisors. With free tips and interviews assist in the selection, design and implementation of investment measures of energy efficiency and use of renewable energy sources in residential buildings. Advices are increasing energy awareness of citizens, energy savings and reduction of greenhouse gas emissions and thereby are facilitating the implementation of certain measures and programs related to energy policy.

ENSVET network is based on the first and third paragraph of Article 352 EA-1, organized by the Eco Fund, together with interested local communities - municipalities. Eco Fund is also the coordinator of the network and manages the operation of the municipal advisory offices network and into the integrated energy consultants.

The project ENSVET is systematically combating pollution of the environment, energy poverty and dependency on energy imports. It also increases the quality of life and green jobs. ENSVET is giving advices to the citizens, final customers of energy in the residential sector, and is offering free and commercially independent advices with training services in the field of RES and RUE.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of energy advices: 5003 per year on an average basis.
- Energy savings in GWh per year due to the implementation of energy advices for citizens: 18.58 million kWh per year on an average basis.
- Reduction of greenhouse gas emissions due to the implementation of energy advices for citizens in ton CO<sub>2</sub>: 4846 per year on an average basis.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Year	Number of advices*	Savings (GWh/year)*	Emission reduction* (t CO <sub>2</sub> /year)
2012	5.867	20,16	5.257
2013	5.483	18,32	4.776
2014	4.344	18,54	4.834
2015	4.321	17,33	4.517

\* Data provided by Eko sklad.

### EVIDENCE OF SUCCESS

Network ENSVET only in 2015 advised for renovation or new construction of more than 6,000 objects. In the last ten years helped to consult in renovation of 61,000 dwellings in the media published over 2,000 articles and radio and TV broadcasts. During this time it also carried about 900 lectures for residents.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Energy legislative is different in each country,
- Way of taxation of energy usage is different in each country.

### TIME REQUIRED TO COMPLETE THE BP

1 year

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

-

#### E-MAIL

ekosklad@ekosklad.si

#### ORGANIZATION

Eko sklad, Slovenski okoljski javni sklad. Bleiweisova cesta 30. 1000 Ljubljana

#### TYPE OF ORGANISATION

Public

#### WEBSITE

www.ekosklad.si/fizicne-osebe/en-svet



REGION SLOVENIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Education “European Energy Manager - EUREM”

**PARTNER REGION**

Slovenia

**LOCATION DATA**

Slovenia

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector
- Innovation

**DESCRIPTION OF THE PRACTICE**

Education “European Energy Manager - EUREM”, which was developed in Germany in 1997, but so far it has in its framework for efficient energy management, trained for more than 4,000 European energy managers, is intended for all who want to get a comprehensive overview of areas of activity energy manager and relevant skills for efficient management of energy, in particular persons responsible for the management of energy companies in both the public and private sector, building managers, plant managers and production and process engineers.

In Slovenia was the first education EUREM organized within the project EUREM.NET in 2008. Previously it was conducted 8 trainings EUREM, which was successfully completed by 176 European energy managers.

Slovenian energy managers with their project tasks very successful at European level. Within the regular annual conference of the European energy managers, our energy managers received several awards.

Training, which lasts for 6 months, is organised at the Centre for Energy Efficiency Institute “Jozef Stefan”, it focuses on the acquisition of skills for the implementation of energy efficiency measures that provide medium to high reduction in energy use and energy costs at a reasonable investment cost. Participants in the context of education trained to prepare the analysis of the energy situation of the company, technical and organizational preparation and management of energy efficiency projects as well as their appropriate presentation of the company management, assessment and provision of targeted savings and ensuring continuous improvement in the company.

The training is usually held extra-occupational and consists of the three following elements: face-to-face teaching (160 teaching units, 45 min each), self-learning and energy concept (80 teaching units in total). During the courses the participants acquire the theoretical knowledge which they may then apply in the course of their projects for the first time in practice.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- (%) Reduction of annual primary energy consumption in public buildings.
- Number of households with improved energy consumption classification,
- (%) Reduction of the use of fossil fuels in the building sector.
- (kWh) Annual energy savings in households: 16.9 million kWh.

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- Reducing energy consumption with implementation of measures from their project tasks is estimated at 224,5 GWh, 16.9 million kWh annually.
- Reducing CO<sub>2</sub> emissions for 123.3 kton per year.

**EVIDENCE OF SUCCESS**

- Average saving potentials per EUREM project work.
- Energy-saving potential 750 MWh / year.
- Cost-saving potential 30,000 € / year.
- CO<sub>2</sub> reduction potential 200 t / year.
- Investment costs for measure 100.000 €.
- Payback period 3 - 4 years.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- Willingness of individuals and companies to participate in the program.
- Finding a right lecturer.

**TIME REQUIRED TO COMPLETE THE BP**

6 months

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

**CONTACT NAME**  
Boris Sučić

**E-MAIL**  
boris.sucic@ijs.si

**ORGANIZATION**  
Jožef Stefan Institute - Energy Efficiency Centre (EEC)

**TYPE OF ORGANISATION**  
Public/private, national

**WEBSITE**  
<http://si.eurem.net/display/euremsi/EUREM>



REGION SLOVENIA



**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

**Complete renovation of apartment buildings - System Dominum**

**PARTNER REGION**

Slovenia

**LOCATION DATA**

City Municipality Ljubljana

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Activation of demand and combating energy poverty
- Innovation
- New financial instruments

**DESCRIPTION OF THE PRACTICE**

The idea is to solve problems with of apartment buildings from the 50s and 60s of last century:

1. undersized housing,
2. nonperforming housing,
3. seismic (in)security,
4. energy (in)efficient.

250,000 people in Slovenia live in apartment blocks built before 1963, when there were no rules to ensure seismic safety of buildings.

A little stronger ground tremors would cause social bomb (according to a study in 2009 only in Ljubljana would be damaged about 28,000 buildings), a serious earthquake could cause even a humanitarian disaster.

Solution of these problems could be:

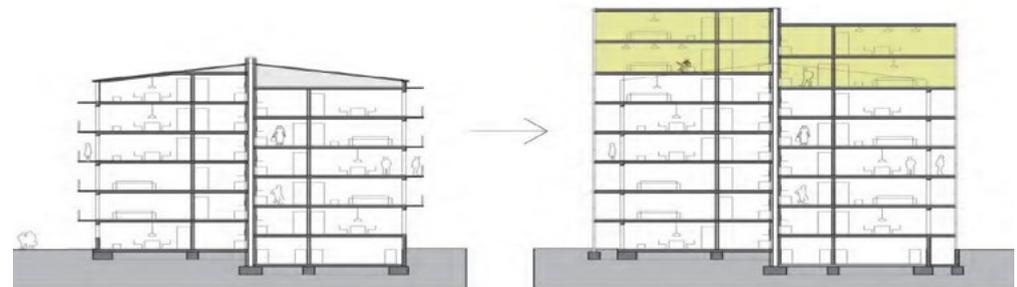
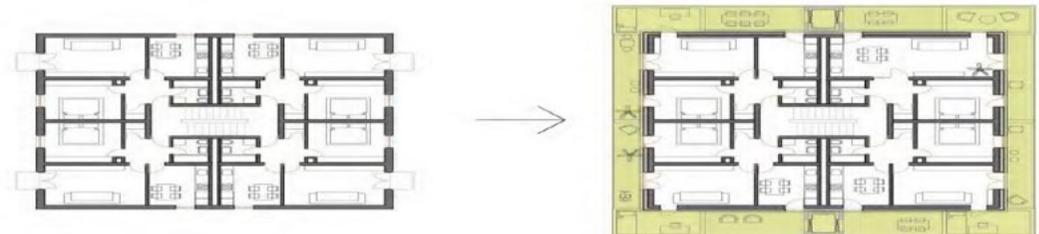
1. extending the block: an increase in existing housing,
2. increasing the block: the addition of new dwellings.

Multi apartment building before renovation:

- small housing,
- without elevator,
- earthquake unsecured,
- non-insulated façade.

Multi apartment building after complete renovation:

- housings are increased,
- flexibility in housing,
- elevator,
- new installations,
- earthquake rehabilitation,
- energy rehabilitation.



#### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling,
- Number of households with improved energy consumption classification,
- (kWh) Annual energy savings in households,
- Number of households with improved energy consumption classification,
- (%) Reduction of the use of fossil fuels in the building sector.

#### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Residential area will increase,
- Value of housing will increase,
- Living conditions will improve,
- Improved energy efficiency.

#### EVIDENCE OF SUCCESS

The project is in the process of obtaining permits and approvals residents.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Consent of neighbours,
- Building permit,
- Financing.

#### TIME REQUIRED TO COMPLETE THE BP

In progress (2 years by now)

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

Tomaž Krištof

##### E-MAIL

office@studiokristof.com

##### ORGANIZATION

Studio Krištof arhitekti d.o.o. Rimska 20. 1000 Ljubljana. Slovenia

##### TYPE OF ORGANISATION

Private

##### WEBSITE

www.studiokristof.com



## REGION SLOVENIA



## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Community of Preddvor – Kindergarten Storžek

### PARTNER REGION

Slovenia

### LOCATION DATA

Municipality Preddvor

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- New financial instruments

### DESCRIPTION OF THE PRACTICE

The kindergarten is planned by three sectors, two are at ground floor, the middle part has the ground floor and main floor. At left sector there are 7 rooms. The modular construction allows addition of two rooms.

In the middle sector there is a sports game room and multipurpose room on the flat floor. On the floor there are administration rooms, kitchen and heating station. On the attic there is machinery of ventilation system.

The total area of kindergarten is 1.500 m<sup>2</sup> of usable area, outside playground, parking places and communication paths, all on the area of 8.500 m<sup>2</sup>.

Passive wood kindergarten was constructed according the Eco found passive standards.

The construction material is Jelovica Thermo Plus with increased isolation of external walls, on façade, roof construction and foundation plate.

Thickness of the isolation, mostly of mineral resources

- on the floor 30 cm
- external wals 40 cm
- roof 44 cm

The level of insulation was increased by wood windows and doors type Ekostar with three glass layers. The energy efficiency is increased with recuperation of air ventilation, which reaches over 80% of recuperation or return of the heat of waste air.

The requests of Eko found for the subsidy were also:

- approval of air tightness of the building at pressure test of at least  $n_{50} \leq 0,6$  h-1. The

test of a specialised Austrian company approved that real tightness of the building was  $n_{50} \leq 0,25$  h-1.

- the building entered in the energy class B1, what means the use of energy in the range 15 – 25 kWh/m<sup>2</sup> per year. The energy audit was made by the Building centre ZRMK Ljubljana, the calculation estimated that the consumption of the erected building is 18 kWh/m<sup>2</sup>per year regarding to the reference location.

The kindergarten is heated by wood biomass trough the district heating system of Preddvor. On the roof there is a photovoltaic power plant of 96 kWp connected to the electrical grid.

- Production of PV 96 kW x 1.050 h = 100.000 kWh
- Total consumption = 60.000 kWh
  - Heating and ventilation 1.500 x 18 = 27.000 kWh
  - Consumption electricity-estimated = 33.000 kWh
- Positive net energy production of the kindergarten = 40.000 kWh

### Investment needed:

- Total investment 2.5 million €,
- Eco fund: 420.000 € grants.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- (%) Reduction of annual primary energy consumption in public buildings,
- (%) Reduction of the use of fossil fuels in the building sector.
- Number of households with improved energy labelling: 1

- Number of households with improved energy consumption classification: 1
- (kWh) Annual energy savings in households

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- Positive net energy production,
- Achieved energy class.

### EVIDENCE OF SUCCESS

Kindergarten is:

- a power plant
- energy class B1, what means the use of energy in the range 15 – 25 kWh/m<sup>2</sup>

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Ways of financing investment
- Energy legislation

### TIME REQUIRED TO COMPLETE THE BP

3 years

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

Miran Zadnikar (Mayor)  
Franko Nemac (Consultant on project)

#### E-MAIL

miran.zadnikar@preddvor.si  
franko.nemac@ape.si

#### ORGANIZATION

Občina Preddvor. Dvorski trg 10. 205 Preddvor

#### TYPE OF ORGANISATION

Public, local government

#### WEBSITE

www.jelovica.si/otvoritev-pasivnega-vrtca-v-pred-dvoru.html  
www.youtube.com/watch?v=C7MsiaDrHAI&feature=youtu.be



— GOOD PRACTICES FOR REGION  
**REST OF  
EUROPE**



REST OF EUROPE

01

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Deep renovation in Upper Austria

### PARTNER REGION

Upper Austria

### LOCATION DATA

-

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments

### DESCRIPTION OF THE PRACTICE

One of the nine federal states in Austria, the state of Upper Austria which borders Germany and the Czech Republic, announced that by 2030 all electricity and space heating will be met by renewable energy sources. It was recognised that in order to achieve this target extensive improvements in energy efficiency were essential. The region passed an Energy Efficiency Strategy in 2004 with the aim to increase energy efficiency by 1% each year, and 1.5% in the public sector until 2010.

The O.Oe. Energiesparverband is an energy agency in Upper Austria that promotes energy efficiency, renewable energy and innovative energy technologies. The agency manages a soft loan programme targeted at homeowners. The homeowners receive information on the energy savings potential of their home in an advice session, and an energy performance indicator is then calculated and identified on an energy performance certificate. A soft loan is then given, the size of which is dependent on the energy savings potential of the building.

From 1993 to 2007 more than 74,000 homes met the programme requirements and received financial assistance.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling.
- Number of households with improved energy consumption classification.
- Number of households engaged in support programmes.

- (kWh) Annual energy savings in households: 350 million kWh/year.
- Number of households with improved energy consumption classification.
- (%) Reduction of the use of fossil fuels in the building sector: -19% oil and -3% gas.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The 74,000 households achieved 350 million kWh / year in energy savings.

In 2007 alone this amounted to a CO2 reduction of 147,000 tonnes

### EVIDENCE OF SUCCESS

The consumption of fossil oil (-19% between 2005 to 2014) and gas (-3% from the previous year) are decreasing.

The specific energy demand (final energy consumption per GDP) has decreased by 26% and the gross inland energy consumption per GRP has dropped by 25%.

The energy intensity has decreased by about 25%.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Poor energy awareness of homeowners.
- Lack of public funds to implement the loan.
- Lack of policy instrument in place to implement the good practice.
- Lack of professionals to give energy advice in the households.

### TIME REQUIRED TO COMPLETE THE BP

-

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

-

#### E-MAIL

office@esv.or.at

#### ORGANISATION

O.Oe. Energiesparverband

#### TYPE OF ORGANISATION

Regional government

#### WEBSITE

[www.energiesparverband.at/startseite.html](http://www.energiesparverband.at/startseite.html)



REST OF EUROPE

02

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Solar thermal installation- ESCO model

### PARTNER REGION

Catalonia (Spain)

### LOCATION DATA

Catalonia (Spain)

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Innovation
- New financial instruments

### DESCRIPTION OF THE PRACTICE

The project, which has been executed using the Energy Service Company ESCO model, consists of a Solar Thermal Installation in a building with 32 housing units.

The ESCO company is in charge of the investment and maintenance of the solar installation, and in exchange, neighbours pay during the following six years the savings this installation will produce.

Once the six years have passed, the installation and its savings will be returned to the neighbour community.

With this action we can prove that this Community, paying in concept of energy the exact amount as the would pay if the solar thermal installation hadn't been made, will be able to amortise it in six years time with the economical savings generated by the reduction of the fuel consumption (natural gas).

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling
- Number of households with improved energy consumption classification: 32
- Number of households engaged in support programmes: 32
- (kWh) Annual energy savings in households
- Number of households with improved energy consumption classification
- (%) Reduction of the use of fossil fuels in the building sector: -40% gas

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

During the first year working with the Solar Thermal Installation, gas consumption has been reduced in 40%, comparing with the previous historical consumption, due to the energy production of the solar thermal installation.

### EVIDENCE OF SUCCESS

A number of 32 houses are using solar energy to heat water, instead of natural gas. This leads to a CO<sub>2</sub> emissions reduction of 15.236 tons on a yearly basis.

This best practice shows how the Energy Service Company (ESCO) models work. It is an evidence of success for commercial or non-profit businesses providing a broad range of energy solutions including designs and implementation of *energy savings* projects, *retrofitting*, *energy conservation*, energy infrastructure outsourcing, *power generation* and *energy supply*.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Poor energy awareness of homeowners
- Lack of ESCOs companies

### TIME REQUIRED TO COMPLETE THE BP

-

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

Xavier Boguña (Gerente)

#### E-MAIL

info@solsolar.cat

#### ORGANISATION

Energía Renovable Solsolar s.l.

#### TYPE OF ORGANISATION

private

#### WEBSITE

www.solsolar.cat



REST OF EUROPE

03

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

Sustainable Campus- Green University

### PARTNER REGION

(Lisbon) Portugal

### LOCATION DATA

Universidade de Lisboa

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Professionalization of the construction sector
- New financial instruments

### DESCRIPTION OF THE PRACTICE

This is the largest project of decentralised energy production in the city of Lisbon, and it will allow this institution to attain patterns of energy efficiency and renewable energy use in line with the best practices of reference educational institutions around the world.

This decentralised production of renewable energy is assured by four photovoltaic plants. The installation of the photovoltaic plants also promoted the energetic certification of some of the building in campus.

With this, the University of Lisbon proceeded to energy audits where some improvement measures were identified, that would reduce the energy consumption.

The plants were installed on the roofs of some buildings and also in parking and recreational areas, where they also function as shading structures.

The energy produced will be sold and injected into the grid in its entirety, and the part of the revenue belonging to the University of Lisbon will be applied directly in the implementation of the energy efficiency measures identified in the audits.

These plants only correspond to the first phase of the project. At the end it is expected to have an installed capacity of 2MW. In a next phase of this project it is intended to constitute a laboratory of energy efficiency knowledge, which will become a workspace and idea centre, taking advantage of this privileged location within the University.

The project also includes the construction of a roof garden, populated by various botanical species, which connects two building at the University.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- (%) Reduction of annual primary energy consumption in public buildings.
- (%) Reduction of the use of fossil fuels in the building sector.
- (kWh) Annual energy savings in households: +1 million kWh.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

644 kW of Installed power which results in the production of 1.028.480 kWh/year.

Reduction in emissions: 11.662 tons CO<sub>2</sub> during the lifetime of the panels.

The roof garden has benefits ranging from the protection of the buildings, rainwater collection, carbon capture in the plants biomass.

### EVIDENCE OF SUCCESS

The construction of these plants involved the installation of 2.627 photovoltaic panels with an individual unit capacity of 245W, resulting in an installed potency of 644 kW and a connection potency of 556 kW.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Lack of policy instruments that guarantee the purchase of photovoltaic energy.
- Lack of trained professionals in energy audits.
- Poor awareness on energy issues by University managers.

### TIME REQUIRED TO COMPLETE THE BP

-

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

Márcia Vila

#### E-MAIL

mvila@ul.pt

#### ORGANISATION

Universidade de Lisboa

#### TYPE OF ORGANISATION

Public/private, regional/local government, etc

#### WEBSITE

www.ul.pt



REST OF EUROPE

04

**GOOD PRACTICE FICHE**

**TITLE OF THE GOOD PRACTICE**

Casaclima training course for artisans and small enterprises

**PARTNER REGION**

Venice, Italy

**LOCATION DATA**

Venice, Italy

**TOPIC OF THE PRACTICE: THEMATIC COVERAGE**

- Professionalization of the construction sector

**DESCRIPTION OF THE PRACTICE**

This good practice is about a training course devoted to artisans and small enterprises in Venezia region.

The objective of the training was to increase the skills necessary to ensure the quality of the works performed in buildings to reach high energy efficiency.

Topics covered include:

- Principles of physics and energy efficiency.
- Certification CasaClima and regulations related to building construction systems, materials and installation techniques of thermal insulation.
- Installation techniques of wall thermal insulation (coating systems).
- Characteristics and installation of doors and windows.
- Materials and strategies for the air tightness of the building.
- Issues with moisture and steam, measurement techniques and testing.
- Installations in buildings with high efficiency (winter heating and summer conditioning, mechanical ventilation, plumbing systems, electrical systems, power generation from renewable sources, home automation system).
- Sizing and equipment installation problems.

**PERFORMANCE INDICATORS LINKED TO THE PRACTICE**

- Number of households with improved energy labelling.
- Number of households with improved energy consumption classification.
- Number of households engaged in support programmes.
- (%) Reduction of annual primary energy consumption in public buildings.
- (kWh) Annual energy savings in households.
- Number of households with improved energy consumption classification.
- (%) Reduction of the use of fossil fuels in the building sector.

**INDICATORS OF SUCCESS LINKED TO THE PRACTICE**

- 140 artisans and small enterprises attended this training during the year 2014, in several sessions organised during a period of 6 months.
- The course has been organised each year since then with a high success and impact in Venezia region.

**EVIDENCE OF SUCCESS**

Energy certifications in buildings arise as consequence of this training.

The Chamber of Commerce in Venezia region registered an increase of energy professionals.

**FACTORS THAT MIGHT HAMPER THE TRANSFER**

- Lack of professionals to give the training.
- Lack of professionals to attend the training.
- Poor energy awareness of citizens in general.

**TIME REQUIRED TO COMPLETE THE BP**

-

**CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE**

**CONTACT NAME**

-

**E-MAIL**

info@ape.fvg.it

**ORGANISATION**

APE – Agenzia per l'energia del Friuli Venezia Giulia

**TYPE OF ORGANISATION**

APE – Agenzia per l'energia del Friuli Venezia Giulia

**WEBSITE**

www.ape.fvg.it



REST OF EUROPE

05

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

**Financing and delivery of energy saving measures**

### PARTNER REGION

Germany

### LOCATION DATA

Germany

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- New financial instruments

### DESCRIPTION OF THE PRACTICE

KfW, Kreditanstalt für Wiederaufbau (Credit Institution for Rehabilitation) is a promotional bank in the Federal Republic of Germany which supports change and encourages forward-looking ideas in Germany, Europe and throughout the world.

The KfW Financing Programmes for energy efficiency support a financial framework for investments targeted especially at residential buildings. The investors are given long term, low interest loans supported with professional, independent advice.

The loans have fixed interest rates ranging over 10 years with repayment starting after two years. The loans can amount up to €75,000. Once successful, the loan applicant has to inform KfW about the use of the funds according to the programme conditions.

This programme has contributed significantly to help meet the climate goals of Germany.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling.
- Number of households with improved energy consumption classification.
- Number of households engaged in support programmes.
- (kWh) Annual energy savings in households.
- Number of households with improved energy consumption classification.
- (%) Reduction of the use of fossil fuels in the building sector.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

The loans granted by KfW in 2008 to German entities for the financing of energy efficiency investments in residential buildings added up to 6.343 million Euro. This initiated an annual reduction of greenhouse gas emissions amounting to 837,000 tonnes of CO<sub>2</sub> emissions.

In 2009 the loans given to finance energy efficiency investments in residential buildings amounted to €8,864 million and resulted in annual greenhouse gas emission savings of 1.175.000 ton CO<sub>2</sub> emissions.

In 2010 the loans amounted to 8.746 million Euro and resulted in annual greenhouse gas emission savings of 1.049.000 tonnes of CO<sub>2</sub> emissions.

Further effects were achieved by KfW financing measures for energy efficiency investments in firms and municipalities.

### EVIDENCE OF SUCCESS

In addition to the reduction in CO<sub>2</sub> emissions, KfW's financing schemes provides thousands of jobs, mainly in the construction industry.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Lack of bank credits or policy instruments to finance the energy efficiency measures.
- Lack of trained professionals in the construction sector.
- Poor awareness on energy issues.

### TIME REQUIRED TO COMPLETE THE BP

-

### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

#### CONTACT NAME

-

#### E-MAIL

info@kfw.de

#### ORGANISATION

KfW (Kreditanstalt für Wiederaufbau)

#### TYPE OF ORGANISATION

private

#### WEBSITE

www.kfw.de/kfw.de.html



REST OF EUROPE

06

## GOOD PRACTICE FICHE

### TITLE OF THE GOOD PRACTICE

**Energy efficiency refurbishment in a multi-dwelling residential building in Sofia**

### PARTNER REGION

Sofia (Bulgaria)

### LOCATION DATA

Block 10 in the Zakharna Fabrika housing estate in Sofia

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

- Activation of demand and combating energy poverty
- New financial instruments

### DESCRIPTION OF THE PRACTICE

This practice is based in a project to renovate and carry out maintenance of a multi-dwelling residential building: Block 10 in the Zakharna Fabrika housing estate in Sofia, Bulgaria, for low income families (who cannot afford to pay for renovation). The renovation aimed at reducing the consumption of energy by the residents of the block and to help target the fuel poor in particular.

The project was started and managed by the Bulgarian Housing Association in partnership with the Housing Association De Nieuwe Unie, Rotterdam and the housing Association Woonrecht, Dordrecht (both from the Netherlands) in the framework of the "Sustainable Housing Management in Bulgaria; improving the capacity of homeowners associations of multi-family apartment buildings".

Key target groups in this project are homeowners, homeowner associations of multi-apartment building as well as their associations.

The multi-residential building's roof, basement, windows and external brick walls were in poor condition. The building, dating from 1947 had 13 flats, all of them privately owned.

The residents of the whole housing estate were approached with the idea for the project in September 2003 and were invited to participate in the pilot project. The owners of Block 10 were registered as a legal entity.

An energy audit was carried out before the works started and some monitoring also took place after the works were done. The external walls were insulated, the roof was water proofed and thermally insulated. The basement was also thermally insulated and the heating system was improved by the balancing and insulation of pipes.

The two attic rooms were transformed into small flats. The rent paid by the tenants for these two small flats helped pay for the loan needed for renovation. The renovation was completed by the end of 2004. The project costs were about € 60,000, and it was financed by a loan from a Dutch bank.

The 20 year, monthly payment of the loan totalled €420 - 40% of it is paid for by the rent from the two new flats.

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

- Number of households with improved energy labelling.
- Number of households with improved energy consumption classification.
- Number of households engaged in support programmes.
- (kWh) Annual energy savings in households.
- Number of households with improved energy consumption classification.
- (%) Reduction of the use of fossil fuels in the building sector.

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

- The renovation has increased the lifetime of the building and led to energy savings above 50%.
- The residents also have increased comfort.
- The building received a certificate A according to the Bulgarian certification. This certification exempts the residents from paying a building tax for ten years.

#### EVIDENCE OF SUCCESS

A range of *trainings* of homeowners and homeowners associations have been already carried out.

New approaches in organising and financing renovation projects have been developed, also contributing to improving the energy efficiency of the buildings.

In November 2005 an *International Seminar* on sustainable housing management, maintenance and renovation has been held sharing experiences among countries in Central- and Eastern Europe.

In February 2006 a *National Round Table* with public discussion on the new Draft Condominium Law has been initialised within the framework of the project. One of the major project results is the establishment of the Union of Homeowners Associations in Bulgaria (CAC). CAC has been presented as mission and main objectives on the conclusive *dissemination seminar* that has been organised in close cooperation with the municipality of Varna.

#### FACTORS THAT MIGHT HAMPER THE TRANSFER

- Poor energy awareness of homeowners.
- Difficulty to make that all homeowners agree.
- Lack of bank credits or policy instruments to finance the rehabilitation.

#### TIME REQUIRED TO COMPLETE THE BP

-

#### CONTACT DETAILS TO OBTAIN FURTHER INFORMATION ON THE PRACTICE

##### CONTACT NAME

-

##### E-MAIL

cac.unionbg@gmail.com

##### ORGANISATION

Union of Homeowners Associations in Bulgaria (CAC)

##### TYPE OF ORGANISATION

private

##### WEBSITE

[www.cac-bg.org/index.php?p=23261](http://www.cac-bg.org/index.php?p=23261)

# 4

## APPEN- DICES. GOOD PRACTICE FICHE TEMPLATE

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The objective of this template is to collect detailed and structured information on good practices identified within each participating region in BUILD2LC. One good practice can be described per form. There is no limit on the number of good practices that can be submitted, but a minimum of **10 good practice descriptions are required per partner**.

## GOOD PRACTICE FICHE

### GOOD PRACTICE DEFINITION

According to the Interreg Europe Programme, a good practice is defined as an initiative (e.g. methodologies, projects, processes, techniques) that has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective.

Title of the good practice

Partner region

Location data

### TOPIC OF THE PRACTICE: THEMATIC COVERAGE

Please mark the topic of the practice. A good practice could potentially match several fields at the same time.

- Activation of demand and combating energy poverty
- Professionalization of the construction sector
- Innovation
- New financial instruments
- If the case, add new topics (other):

### DESCRIPTION OF THE PRACTICE

Please describe in detail the practice itself, taking into particular account: kind of the practice, objective, challenge addressed, main stakeholders involved and beneficiaries target groups, financial resources required for its implementation, legal framework, etc. Please provide also information on those factors of the practice that are really connected to the regional context, on strenghts/weaknesses factors, and lesson learned from the good practice.

REGION:

### PERFORMANCE INDICATORS LINKED TO THE PRACTICE

Please tick at least any of the self-defined performance indicators in the Application Form (related to Policy Instruments) that may apply to the good practice.

- Number of households with improved energy labelling
- Number of households with improved energy consumption classification
- Number of households engaged in support programmes
- (%) Reduction of annual primary energy consumption in public buildings
- (kWh) Annual energy savings in households
- Number of households with improved energy consumption classification
- (%) Reduction of the use of fossil fuels in the building sector
- Other: \_\_\_\_\_

### INDICATORS OF SUCCESS LINKED TO THE PRACTICE

Please indicate any other result and/or impact indicators to demonstrate the success of the practice, such as: Total energy savings associated to the practice, reduction of CO<sub>2</sub> emissions, reduction of energy spending, surface (m<sup>2</sup>) or buildings affected, perceptions by users (comfort, quality of life), patents output, total investment outcome, enhanced professional qualification, number of jobs created... etc.

### EVIDENCE OF SUCCESS

Please, add detailed information to the above indicators and explain why this practice is considered as good.

### FACTORS THAT MIGHT HAMPER THE TRANSFER

Please indicate problems or barriers that could appear when transferring the good practice to other partner

### TIME REQUIRED TO COMPLETE THE BP:

Contact details to obtain further information on the practice

CONTACT NAME

E-MAIL

ORGANIZATION

TYPE OF ORGANISATION

Public/private, regional/local government, etc

WEBSITE

FICHE COMPLETED ON DATE:



More info: [www.interregeurope.eu/build2lc](http://www.interregeurope.eu/build2lc)



Andalusian Energy Agency  
MINISTRY OF EMPLOYMENT, BUSINESS AND TRADE



VIŠĄJŲ INVESTICIJŲ PLĒTROS AGENTŪRA



asiantaeth ynni  
**SevernWye**  
energy agency



RARR  
RZESZOWSKA AGENCJA  
ROZWOJU REGIONALNEGO



REGIONALNA ENERGETSKA AGENCIJA  
NORTH-WEST CROATIA  
SIEVEROZAPADINE HRVATSKE  
REGIONAL ENERGY AGENCY



REGION  
JÄMTLAND  
HÄRJEDALEN



**leag**  
Lokalna energetska  
agencija Gorenjske



**BUILD2LC**  
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European Union  
European Regional  
Development Fund