

Intelligent Energy  Europe



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## Deliverable D.3.5

# Report on the pre-consultations and on-site auditing along with quality control

2007

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## 1 Objectives of Deliverable 3.5

RURASU WP 3 pays attention to the fact that the implementation of the EBPD targets can only be reached through intense consultation and auditing work all over Europe. The DASUs are able to play an important role in this consultation effort since they are rooted in the rural environment and have strong ties to all relevant stakeholders from the public and the private sector. For this reason, RURASU Task 3.4 defines a certain amount of pre-consultation and on-site auditing actions. Since the value of the RURASU results should be beyond the concrete implementation of these consultations, it was agreed to use the RURASU consultations as a case study for analysing the quality of the consultation efforts particularly in view to the EBPD requirements. Deliverable 3.5 is meant to lay the data basis for an exact analysis of the quality of the ongoing consultations and to formulate suggestion to even improve effectiveness and efficiency.

## 2 Working Structure

The RURASU work-programme requires more than 50 pre-consultations and on-site auditing requirements in the four DASU regions. On the RURASU project meeting it was agreed that every DASU performs at least 15 consultations so that in total the contractual obligations are overdone by 10.

WIP as WP Leader prepared a template to ensure that all reporting activities of the DASUs takes place along the same criteria and thus creates a good data basis for analysis and evaluation. The template comprises the main sectors:

- Description of the consultation framework
- Process and content of the consultations
- Success of consultations

The structure of this report is based on the prepared template and consequently addresses the consultations of each DASU in separate chapters. An overall conclusion sums up the report. This conclusion then is the starting point for the preparation of Deliverable 3.8 “Report on Quality Control of auditing consultancies”.

## **3 Pre-consultation and on-site auditing in the German DASU**

### **3.1 Description of consultations**

The consultations are realised at 40 information centres located in the region Allgäu and in the central consultation centre (eza!-house) in Kempten. At the latter, energy consultations take place from Monday to Friday between 14:00 and 18:00. 40 more information centres are distributed across four counties throughout the Allgäu. Here, the consultations mostly take place twice a month within fixed times. The consultations are free of charge for citizens living in the respective village or city. The costs are paid by the individual community. The consultations at the eza!-house are free of charge for Kempten citizens. In case customers from outside Kempten are seeking advice the first half an hour of consultation is free, each subsequent half an hour cost 15 Euro.

The customer receives a general and comprehensive consultation on all building, refurbishment and energy issues. Of course, he also gets technical advice. The contents of support programs are part of almost each consultation. The customers are largely interested in subsidies and in loans with low interest rates. By means of exhibition models, such as various insulation materials, wood pellets or window models the theoretical explanations of the energy consultant are illustrated. Furthermore, beside the eza!-house a separated exhibition room is provided, where eza!-partner companies (explanation see below) show their exhibits. Here, the energy consultant can demonstrate e. g. boiler and ventilation cross-sections, an air-conditioned façade, insulation examples etc. Long-term experiences show that the combination of theoretical explanations and practical application examples is evaluated positively by the customers and leads to a clear understanding. In March 2007 a quality assurance system for all consultation centres was introduced, which systematically evaluates the customer's feedback. After the consultation the customer receives several documents in order to give him the opportunity to study the new information at home calmly. The documents comprise the following:

- o Information flyer according to the respective consultation subject

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- o Overview on the support programs and subsidies containing all useful information, e. g. eligibility, support projects, support conditions, support amount etc.
  - o eza!-partner-list: According to the motto „build and refurbish – easier with eza!-partners“ 120 companies from the Allgäu are organised within a regional network. eza!-partner-companies commit themselves to the compliance of a energy codex. This contains the obligation to apply energy saving and environmentally friendly building and refurbishment technologies. Additionally, the customer shall be motivated to use such technologies and products, too. He shall receive integrated consultations in the sense of a branch overlapping approach. The companies have to participate in training programs where the latest improvements in the fields of Renewable Energies and Energy Efficiency are taught. Finally, the companies are forced to take part in a quality assurance system, managed by eza!.
  - o Energy consultation flyer – here the customer is asked to evaluate the consultation. Thus, eza! can control the consultation quality. In individual cases eza! interferes or takes countermeasures by specific education activities. In severe cases the energy consultant will be replaced.

The registration for the consultation happens via three means:

- o personally, either at the community or in the eza!-house at the reception
- o via telephone, phone numbers can be found in the consultation flyers, on the business cards of the individual consultation centres or in the printed media
- o via email: this possibility is only valid for consultations in the eza!-house

As the energy consultation office in the eza!-house is daily staffed the customer gets an appointment relatively quickly (in average within one or two days). However, in times of more requests, waiting times could be extended. But often customers get a date immediately. For the external information centres waiting times are largely depending on the time of registration. In worst cases the customer needs to wait for two weeks, in the best case he gets a date for the same day. A short example: An information centre offers consultations each first and third Wednesday of a month. Thus, in case of a registration on the first Thursday of a month the customer has to wait for almost two weeks

Normally a personal contact is sufficient (personal or phone consultation) depending on the consultation subject. If the customer plans a new building or a complete refurbishment often two or three consultations are necessary.

### **3.2 Procedure and contents of the consultation**

The eza!-energy consultations cover all demands of the EPBD, except the inspection of air-conditioning systems. Eza! is not able to control exactly the extent of the realised activities as reliable data is not available. 90 % of the consultations are related to refurbishment measures, while the remaining 10 % concern new buildings. Consultations on the new energy pass and on boiler inspections were not recorded separately. However, since the beginning of 2006 consultations on energy passes increased continuously. eza!-energy consultants are independent experts ever since, thus requests on such experts never occurred. Most customers are freely willing to refurbish their homes or to build energy optimised houses. Unfortunately, many customers have a sceptic attitude towards the demands of the energy pass, because it is regarded as obligation given by the government. However, one eza! task is to show the customer the advantages and the positive effects of energy passes.

The customer usually has to provide the following data in order to receive an useful energy consultation:

- o Consumption invoices
- o Reports from the chimney sweeper
- o Building data as building plans, used materials, already realised measurements

The consultant utilises these data in order to calculate energy inputs and outputs via the software "Hottgenroth". Experiences show that the customers mostly deliver reliable data. There are no experiences where difficulties occurred.

In case the customer wants detailed calculations, the energy consultants always use this software tool ("Hottgenroth"). However, these calculations are not free of charge as they are usually on-site auditings. During an on-site auditing detailed building data are recorded firstly. Afterwards an analysis of the actual building state and several refurbishment measurements are calculated. Finally, a comprehensive report is elaborated. This report comprises the calculation of possible energy savings, economical

calculations of the individual measures, descriptions of all suggested measures and references to relevant support programs. The report is given to the customer during an extensive discussion. Also for on-site auditings eza! introduced a quality assurance system in March 2007. Here, the reports are checked randomly with a systematic evaluation of the customer's feedback.

Before the first contact with eza!, some costumers already realised their own ideas. These are often window or boiler replacements, where integrated considerations on the energetic situation of the complete building were not considered, unfortunately. The majority of the customers are open for suggestions made by the consultants. The suggestions often include outer wall insulations, window replacement often combined with central ventilation with heat recovery, heat insulation of the cellar ceiling and the installation of a solar thermal system. Ideally, several of the suggestions are combined during realisation. However, there are still customers, who can hardly be persuaded to get into action. These persons often belong to the character of "I know all". In spite of technical and cogently arguments they are not open for the consultant's suggestions.

The customer's reasons for seeking energy advice are various and differ largely. However, there are two main reasons: Firstly, the customer wants to save money (mostly in combination with public funds), secondly, they want independency from fossil fuels. The latter often results in the use of regional fuels as pellets and wood chips. Still, there are customers who prefer issues as energy savings, improvement of living standard or building maintenance.

The main reasons for refurbishments are cost savings.

### 3.3 Success of the consultations

In the frame of a thesis, 200 on-site auditings were evaluated. One of its results is, that 50.000 Euros were invested by each customer in average. The following measures were implemented:

Measure	Percentage
Replacement of heating system	70,0 %
Outer wall insulation	43,5 %

Roof insulation	42,6 %
Window replacement	39,5 %
Solar thermal system installation	33,3 %
PV installation	16,7 %

*Table 1 Implementation rate of consultations of the German DASU*

It was not evident that the cheapest measures were realised. Generally speaking, the suggested measures were mostly realised. All suggested measures were hardly implemented as investment costs would be too high. According to estimations by the consultants approximately 50 % of the refurbishment suggestions will be realised.

During the consultation the customer gets most of the requested information. In case open questions can not be clarified, the consultant is mostly willing to search for answers externally in order to provide the information later. Then, the customer is asked to come back or call in. However, for the implementation of measures the customer has to make direct contact to building planners and building companies, preferably companies being member of the eza!-partner network.

The great majority of the customers is deeply contented with the eza!-consultations. This is shown by the feedback of the implemented quality assurance system. The customer demands are mostly covered by the detailed and practical information they receive. The results of statistical evaluations show that personal recommendations lead to approximately 11 % of the consultations. By far distance, first and second main dissemination tools are communal brochures and the daily newspaper. The introduction of the quality assurance system for energy consultations will lead to systematical feedback evaluations in the near future.

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## **4 Pre-consultation and on-site auditing in the Greek DASU**

### **4.1 Description of consultation framework**

In the frame of RURASU projects have been done a number of visits on building in the rural and sub-rural areas of Pieria, Greece. During the visits have been investigated different parameters of the building skin and its system. Additionally, they have been formulated recommendations for improving the energy performance of the building. The recommendations are grouped into three categories, which are focus to:

- o 70,0 % Replacement of heating system
- o Improving energy efficiency
- o Increasing the energy gains (RES)

Generally it is accepted that interventions related to reducing energy losses have the shorter pay back period, while those that increase the energy gains through the use of RES have longer pay back period.

All consultations have been done free of charge. The time for consultation work was almost one (1) hour in-situ and (2) hours for rough calculations for estimating the possible energy conservation or energy productions for the suggested interventions. No measurements or detailed calculations have been done.

The building owners or managers came in contact with the DASU representative by phone calls that have been done from the DASU personnel.

In this report are given information for thirteen different on-site auditing and pre-consultations.

### **4.2 Process and content of the consultations**

The on-site auditing and pre-consultations have been done by engineers representing AUTH. The durations of the on-site auditing and pre-consultations was maximum one (1) hour and it was free of charge. No measurements or detailed calculations have been done. The whole information has been gathered by visual inspection or they have been

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given by the building owner or managers. Even the building owners or managers have been told in advanced; most of them had almost no information on the final energy consumption either for heating, cooling or lighting. Therefore, even the rough estimation of energy conservations is in terms of relative values.

The auditing has been done using an extensive version of the RURASU questionnaire. The additional information is:

- o Monthly values of energy consumption
- o Desired comfort temperatures
- o Monthly schedule for heating and cooling
- o Suggested refurbishments concerning the lighting system
- o Suggested refurbishments concerning cooling

Even the consultation results concern almost new constructions the recommendations are mostly related to interventions improving energy efficiency and reducing energy losses. Tables 1 and 2 give an overview of the consultations results.

Another issue is that some owners have been spent money on high energy efficiency systems while they had high energy losses through the building skin. Also, some of them they were willing to spend money for installing renewable energy systems, especially PV panels, while they had high energy losses through the building skin or / and low efficiency systems. It is quite interesting that people willing to spend money for installing PV modules they are reluctant to replace the low efficient lamps they use as they think that those with high luminous efficacy are expensive and have long pay back period.

According to consultations results a big percentage of building owners are willing to install PV modules as they like to sell the possible energy production to the electricity company.

Recommendation	
Reducing energy losses	30%
Improving energy efficiency	52%
Use of RES	18%

*Table 2 Proposed interventions in the Greek DASU in percentage*

Recommendation	Number	Category
Waste heat recovery ventilators	2	Reducing energy losses
Thermal insulation	1	
Windows replacement	2	
Heat insulation of roof	1	
Additional heat insulation	1	
Outer wall insulation	1	
Installation of BEMS	2	Improving energy efficiency
Replacement of lamps	8	
Heating system replacement	2	
Cooling system replacement	1	
Local thermostatic control	1	
Thermal solar	4	Use of RES
Thermal solar only with process water	1	

*Table 3 Proposed interventions in the Greek DASU in absolute figures*

A good argument for persuading the building owners and managers to materialize the suggestions was the expected implementation of the EPBD. As the building stock is in rather medium quality concerning the energy behaviour, the building owners are willing to improve their construction as they expect possible profits increasing the building's market value. So, the construction industry in the area seems to be in front from the legislation framework.

Other strong modifications for building owners to improve the energy behaviour of their buildings seem to be the possible energy savings and the protection of the environment and other relevant items.

Finally many people in the area are willing to invest to PV modules as they expect to earn money by selling their energy production to the electricity company. Unfortunately many possible investors are frustrated from the bureaucracy and the lack of updated legislation. The installation of PV is not referred in Table 2 as their possible energy production do not affect the energy behaviour of the building.

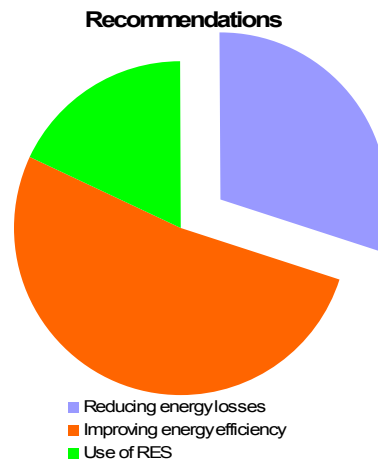
### **4.3 Success of consultations**

The consultations were quite successfully in the following means:

- o The building owners and managers came in contact with the Device and Advice Unit. This extended the existing database of the DASU. Information flyer according to the respective consultation subject
- o The owners had the opportunity to have free professional consultation for possible refurbishment of their building. Information flyer according to the respective consultation subject
- o Through the consultations it became possible for the DASU to have a “common” approach to the way of improving the existing building stock.

As already mentioned, according to the consultations results (Table 1, Figure 1) a big percentage of suggestions concern the reduction of energy losses even the buildings are new and the owners have already spent money for high efficient systems. This shows the willing of owners to invest in low energy buildings and the capability to reduce significant especially the heating load even with low technology interventions.

Even the building owners are willing to materialize most of the suggestions none of them have done it. Many of them are planning to implement the refurbishments during the beginning of the winter period as they think that this is the most convenient time period.



*Figure 1 Proposed interventions*

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## **5 Pre-consultation and on-site auditing in the Scottish DASU**

### **5.1 Description of consultations**

#### **5.1.1 Owner-occupier homes**

Owner-occupier homes were assessed by the Energy Agency, located in South-West Scotland with a catchments area comprising North Ayrshire, East Ayrshire, South Ayrshire and Dumfries and Galloway.

The Energy Agency staff of 9 full-time staff and 2 out-reach workers are involved in a number of projects covering the following sectors:

- Renewable Energy
- Fuel Poverty
- Volunteer training
- Health sector partnerships
- Local authorities
- Education

The Agency is a registered charity. Its Management Board of 10 directors of regional and local groups is responsible for all reporting and decision-making. The Agency has also established a trading company to operate interest-free loans and grant schemes.

Contact is made with the general public by a combination of national and local advertising, public awareness presentations, attendance at public events and direct mailing. Many people are also directed by word-of-mouth or from other entities working in the energy sector to telephone the Agency to obtain advice on a wide range of topics and grant assistance.

For the purpose of RURASU, selected homes were assessed as part of the Rural Communities Renewables Scheme (RCRS), a funding scheme for insulation and renewables measures, financed by central and regional government and a major utility company.

RCRS operates by direct mailing those rural homes in Ayrshire identified as not able to receive mains gas. Rurally located homes experience higher than average energy costs, and were thus identified as those who should appreciate the greatest help to reduce their energy costs.

The homes selected for the RURASU consultations were those applicants to RCRS who had expressed an interest in renewables measures, who were unsure which were the most appropriate for their site and property, and who needed a visit to their home to help them decide.

Many other homes under RCRS were helped purely by telephone without recourse to a home visit, and these homes do not form part of this report or analysis. The content of these consultations is logged in an RCRS database. Contacts not relating to RCRS are stored in other databases.

Those requesting a consultation at their home were sent an information pack to arrive prior to the meeting, covering the technologies of interest, typical costs and payback periods, and a list of accredited installers that operate in their area. They were also provided an appointment within one week of contacting the Energy Agency. During that time they had the opportunity to not only research the subject-matter themselves, but to also contact staff at the Energy Agency for further advice.

### **5.1.2 Council-owned homes**

South Ayrshire Council owns around 9,000 domestic dwellings that are rented to tenants. The tenants have responsibility to pay their own bills but the Council is responsible for maintaining and upgrading the stock. The Council has a strategy to improve the energy efficiency of the housing and is aiming to have a minimum energy rating of 5 (on a scale of 0 to 10) for each property by 2015. The Council also has a policy to try to eradicate fuel poverty by 2016. Fuel poverty is where a household has to spend more than 10% of its income to adequately heat the home. The Council has completed programmes of low cost insulation measures of loft insulation and cavity wall insulation where appropriate.

Currently around 7% of council properties do not meet the required standard for energy efficiency. The biggest problem in achieving this standard is where the properties are in an area that is not served by mains natural gas which applies to approximately 30% of

the stock. Where the properties are heated by electricity they often do not meet the energy efficiency standard and are unaffordable for the tenants to heat.

Installing solid fuel heating systems is discouraged because of the high carbon content of coal and the fact that when tenants are elderly they often become unable to manage the manual handling of the coal and ash. The main options offered to these tenants are either electricity or oil where possible.

Heat pumps have not been commonly used in the UK to date mainly due to their high capital cost. There was never an incentive for landlords to install such an expensive system when the tenants were paying the bills. As a responsible social landlord and to meet its policy aims the Council is keen to look at alternative methods of heating that would reduce bills for the tenants and emissions of CO<sub>2</sub> to the atmosphere. It was agreed to carry out a trial on 5 properties with either wood pellet systems, ground source or air source heat pumps.

After some initial assessment and investigation it was decided to not install wood pellet heating systems at this point in time due to the high cost and uncertain supply of wood pellets. The current economics are such that it would have been more expensive to run a woodpellet system compared to an oil or gas system.

A full assessment of the homes was considered necessary to identify their suitability for the heat pump system including access for a drilling rig to bore a vertical borehole for the ground loop system. None of the gardens were big enough to go for a horizontal ground loop system. An assessment by telephone would not have been possible to obtain the necessary details at the level of accuracy required. The energy advisor has undergone training to be able to model and assess the property to establish the energy rating and heat loss characteristics of the property. Without this level of assessment there would have been many tenants who would have had the disruption of multiple contractors carrying out their own surveys when in many cases the property would not have been suitable. As well as the inconvenience this would have raised expectations unnecessarily.

## 5.2 Process and content of the consultations

### 5.2.1 Owner-occupier homes

The RURASU consultations comprised multiple stages, as follows:

- Pre-visit telephone conversation and information exchange.
- Customer internet research and material review.
- On-site assessment of site and full energy audit undertaken.
- On-site review of lifestyle habits and occupancy data.
- On-site discussion of appropriate renewables technologies, providing reasons for discounting inappropriate measures.
- On-site discussion of insulation measures, providing reasons for discounting inappropriate measures.
- On-site review of options and scope of work involved.
- On-site provision of estimates for work undertaken, and discussion of other related works.
- Off-site entering of data into energy assessment software.
- Off-site production of different scenarios using software (e.g. effect of heating with a heatpump vs mains gas).
- Off-site interpretation of results from software, and collation of recommendations.
- Off-site writing of letter of recommendation and provision of relevant information (e.g. list of approved installers).
- Off-site translation of results into RURASU worksheet.
- Follow-up with customer to determine actions taken and any other support required.

In general, the site visits took approximately 2 hrs, including travel time.

The following information is collated for each property:

House style/type:	Any open fires?
House age:	Any closed room heaters?
Conservatory?	Any other secondary heating system?
No of bedrooms:	Heat proportion of primary / secondary

	heating:
Total no. rooms:	Heating use pattern (extended / working etc):
Room height:	Water consumption (standard / above average etc):
Length:	Hot water production by?
Breadth:	Cylinder insulated?
Shape:	Cylinder thermostat?
Glazing area:	Floor type:
Glazing type:	Floor insulation:
Occupancy:	Wall type:
Type of primary heating system:	Wall insulation:
Boiler efficiency:	Roof style/type:
Boiler size:	Loft rooms?
Fan assisted?	Loft insulation:
Boiler controls:	Cooking energy – hob/oven:
TRVs?	Low energy lighting?
Type of radiators:	Other lighting (e.g. external):
Efficiency of radiators:	Ventilation:
Microbore or standard piping?	
Electricity supplier and tariff:	Any other relevant info:
Gas supplier and tariff:	
Other energy sources:	

*Table 4 Information table for data input in Scottish DASU*

The collected information is then entered into proprietary software that produces the energy data for use in the RURASU calculations, examples of which are provided in the screenshots below:

Heat Loads and Efficiencies Diagnosis Screen		
	Primary	Secondary
Total fuel used (GJ/yr)	23.6	16.2
System efficiency (%)	315.0	60.0
Cost of heat (£/GJ)	8.3	7.1
Zone 1		
Heat into zone (GJ/yr)	6.2	74.7
Fraction from primary system	0.70	0.90
Demand temp (C)	18.00	15.15
Average internal temperature (C)	16.37	13.30
Base temperature (C)	12.13	11.21
Degree days	1514	1316
Overall		
Design heat loss (kW)	15.33	
Approx Boiler design size (kW)	-	
Heat loss parameter	2.40	
Total floor area	290.0	

Specific Loss Diagnosis Screen			
	Zone 1	Zone 2	T
Specific loss (W/C)	30.4	666.3	61
Fabric loss (W/C)	19.7	472.3	41
Ventilation loss (W/C)	10.8	194.0	21
Gains / specific loss (C)	9.7	1.9	
Interzone coefficient			7
Ventilation analysis (a.c.h.):			
Pressure test	n/a		
Unsealed flues & chimneys	0.06		
Passive vents	-		
Windows and doors	0.20		
Timber floors	0.10		
Loft hatch and lobby	0.08		
Background infiltration	0.35		
Subtotal	0.89	(shelter factor 1.13)	
Fan ventilation	-		
Occupant ventilation	0.01		
Mechanical ventilation	-		
Total	0.89		

Fuel Use Diagnosis Screen		
	GJ/yr	£/yr
By Application:		
Primary heating:	23.6	424
Secondary heating:	16.2	69
Water heating (main fuel):	5.6	146
Water heating (second fuel):	1.1	17
Cooking (main fuel):	2.7	39
Cooking (second fuel):	-	-
Lights and appliances (on-peak):	14.9	215
Lights and appliances (off-peak):	3.7	97
Standing charges:	-	30
Totals:	67.9	1038

Water Heating Diagnosis Screen		
	W	GJ/yr
Hot water demand	234	7.37
Distribution losses	41	1.30
Tank losses	50	1.58
Primary circuit loss	0	0.00
Solar input	0	0.00
Water heater efficiency (%)		315.00
Fuel use (main system)		5.60
Fuel use (second system or on-pk)		1.15
Overall system efficiency (%)		109.06
Internal gains from water heating (W)	131.44	
Number of people	3.00	

Figure 2 Screenshot of the RURASU calculations of the Scottish DASU

This data is not provided to the customer in raw form, but is summarised as space and water heating energy consumption, building heat load and the effects differing renewables have on these figures. The report also informs the customer anticipated running costs between the various renewables options, and where appropriate the impact insulation measures can have on energy saving.

The consultations were well received by the customers, who appreciated the additional information, the ability to talk to an expert on a one-to-one basis on all aspects of the measures, and the impartiality of the information provided. With sufficient funding, the Energy Agency would hope to provide this depth of advice and support more often.

It is possible that without the one-to-one consultation the customers would have a) been given inappropriate or incorrect advice, and b) would have considered the whole exercise less important.

## **5.2.2 Council-owned homes**

An initial screening exercise was carried out to identify properties that would be suitable for the trial. Properties were identified where the tenants were in receipt of state benefit (low income), that had no access to mains gas and that were heated by electricity or solid fuel and with existing heating systems that were old enough to be due for replacement anyway.

A number of properties were visited for the consultation with the tenants in their own homes and for a survey to be carried out. The energy rating for the property was established using the software tool 'NHER Surveyor' on a laptop in the house. This involved taking physical measurements of the heatloss elements and inputting details of the heating, lighting, cooking and ventilation systems.

The software allowed for analysis of different retrofit energy efficiency and renewable energy measures so that the most cost effective package could be recommended and installed. The survey also identified if there was suitable access for drilling equipment to the gardens and suitable space internally for the heat pump and water tank.

The proposed new heating system was explained to the tenant and information left with them. Their verbal agreement was ascertained at this point.

A number of issues were clarified by telephone such as use of pre-payment meters.

From the visits five of the properties were selected to have heat pumps installed. A repeat visit was made to the tenants to make sure they were still in agreement and to get their signed authority to go ahead with the works. Two temperature loggers were left in the property at that time for monitoring purposes and will be picked up again after 1 year.

## **5.3 Success of consultations**

### **5.3.1 Owner-occupier homes**

Of the five homes actively surveyed, the following measures have been implemented or are committed to be implemented:

- Upgrading of insulation measures for two homes (cavity wall insulation and loft insulation)

- Installation of water-source heat pump for space heating and hot water.
- Planning permission achieved for a 2.5kWp wind turbine, but not yet committed to installing. Considering a GSHP.
- Installation of solar hot water.

Unfortunately, for those implemented it is too early to be able to assess the cost-benefits of the installations, which can only reasonably be performed after at least a year of continuous use and including a typical winter (unlike 2006/2007, which was an unnaturally mild winter). Although not directly involved in the procurement process, the RCRS scheme periodically assesses how the applicants are performing in obtaining quotations and the other actions required to obtain a satisfactory quote.

Many other insulation and Renewables installations have been completed through the Rural Community Renewables Scheme, but only the ones described above received a full RURASU survey, due to lack of resources.

### **5.3.2 Council-owned homes**

All the properties that required insulation measures will have them installed.

A total of 5 properties are about to have ground source heat-pumps installed. These will be monitored for their effectiveness over a year. If successful the Council is likely to roll out a programme of heat pump installations in future years to achieve its policy aims. The other properties would be suitable to have heat pumps installed however two of the tenants did not want the disruption even though there would be no cost to them. The other properties are on the reserve list and may receive heat pumps if any of the others change their minds or if there are unforeseen technical issues that prevent installation. This will be the first installation of heatpumps in Council properties. If this pilot project is a success then it may be replicated across the Council's own stock of housing (9,000 properties) and may also be used as a case study for the 31 other local authorities in Scotland to replicate.

## **6 Pre-consultation and on-site auditing in the Spanish DASU**

### **6.1 Description of consultation framework**

The creation of the Office Advising Energy (OFAER) of the Subbética Cordobesa, have as a primary target, help to decrease energy waste in buildings located in the territory of the Subbética. This territory located on the mountain range, is composed by 14 municipalities, of which most have less than 50000 inhabitants.

Actually the sector of the construction in the Subbética, have a constant increment, this suppose a crucial moment to apply saving energy measures, in the first part of the construction projects, and an argument to sale for the buildings promoters , validating their construction as a “efficient construction”.

It is had to indicate, in addition, that the Subbética is located on the mountain range, an added value to the economic development of the zone.

For that reason and for longer conversations between few public organizations at autonomic, provincial, municipal and local level, an agreement to create an office of advising energy was made, in the zone of the Subbética Cordobesa, of which was signed by: Excmo. Diputación Provincial de Córdoba, el Excmo. Ayuntamiento de Lucena, el Grupo de Desarrollo Rural de la Subbética Cordobesa (GDR de la Subbética Cordobesa), el Consorcio de la Unidad Territorial de Empleo y Desarrollo Local y Tecnológico de la Subbética Cordobesa (Consorcio UTEDLTs de la Subbética Cordobesa), la Agencia Andaluza de la Energía y la Universidad de Cádiz.

The first aim that we took was give free energetic advice service to 50 buildings. This service would be free until ending June 2007.

.The advising is focus to the citizens, public companies, private companies and cities councils, which want to know and establish the better measures in a specific case.

Therefore, it exist mainly consultations of: design and dimension of Solar Thermal Installations to produce sanitary hot water and heating, Solar Photovoltaic Installations connected to the main net to produce electric energy, substitution of fossil fuels boilers by biomass boilers, installation of heating and cooling efficient systems, improvement

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efficient lighting and illumination systems or insulation measures of the surrounding buildings.

All of these topics entail an integral advising in an energetic overview, which slogan the targets of saving an efficient energy in the Subbetica Cordobesa.

Another main task of the advising office is the information about de aid, incentives and subventions offered by the public administration, for renewable energy activities, until ending of RURASU project, exclusively the Order April 11, 2007, by that the regulating bases of a program of incentives for the sustainable energy development in Andalucía settle down and its call for year 2007 takes place.

Selection of accepted principles has been worked by this office. They all, private citizen and business, could take our services if they were interested about building's energetic waste decrease. Both, new construction buildings, and rehabilitations of existing buildings, are considered.

Depending on client consultation, they have got different information.

There exist many ways to contact with the potential users of OFAER, for example: by the announcement in the newspaper, advertising poster, informative days, courses, thought the Web site, commentaries between people.

Normally the way to contact with OFAER is by phone call or e-mail, making a preview consultation. If this consultation can be resolved at the moment, so it's done, in otherwise, we answer to the person by phone given the solution, or we make a personal meeting with the person at the seat of OFAER, in that meeting the user expose directly his consultation. Normally the last case, suppose a deep conversation interchanging opinions about the consultation.

In the case of a requirement by the user, about a particular analyze, it's elaborated immediately, in it incorporates proposals of saving and efficient measures, the sizing and economic quantity ended with the Pay-Back.

We had consultancies about how to save energy at buildings, about office information, questions about new energy rules, installation at private citizen or business, and even people who questions about installation courses. Some of the answers request for an energetic calculation studying of building, but other answers was easy and simple, like an information request.

If consultations were by telephone, answer was immediate if possible. If were about rules or courses, we took a little time to find information out. In return, for energetic studying of buildings, we needed a little more time, always depending about which building we're talking about. It request to compile data and information about building before perform the study.

Is important as well, to argue about the actual courses, which are in the frame of renewable energy and the legal requirements for related activities, an example could be, give information to renewable energy installation companies, about the test dates, to get professional installer card.

Finally don't forget the renewable energy promotion of OFAER, who coordinate and direct this task with courses about specify points, molding the local technician, also articles in technical magazines and local newspapers (in the Subbetica Cordobesa).

The OFAER office is located at Lucena, Cordova, where we took consultations personally.

## **6.2 Process and content of the consultations**

The consultations answers have been taken in accordance with the Building Technical Code (EPBD). Most of consultations that we have received, ask about the new heating/cooling systems information in new buildings.

The installations of sun shields in private housing or tertiary buildings have been required too.

The clients give us the data of the energetic study, but in some cases are necessary to go to the object building and get data, compiling the used parameters, which will be useful to develop the study in the best way.

Some of the consultations do not need a software tool support to resolve them. Only in calculation studying, support software has been used: LIDER, autocad, calfe.....

Clients come with their own ideas for installing in their housing or business. Some of them propose of installing a boiler or a solar installation for hot water. We have cases of big buildings like schools, where they propose individual air conditioning systems in classrooms

One of the main proposals is to replace with a biomass boiler, the actual gas boiler at schools, also to replace with efficient lamps or lamps of low consumption, the lamps installed nowadays, of that way provide to the building, an ambient's benefit, a "Green Building" image, and also are an example for the students.

Usually, after the consultation, the process is: analyze the different solutions, move to object building, develop the corresponding study and explain in detail to the client, and in that way, we obtain that he leaves the place, knowing the best option (in economy and energy side) for a low building pollution.

Most of time, clients personal motivation is saving money or even energy saving. Some call because they're going to make changes in their installations, or just to take information, or take the new rules. There are clients which change their gasoil to take some of the proposals that we have given. So the principal motivation is to save money.

Solar installations are the best known and requested. But not always are the most suitable. Sometimes, improve the facade isolation, is a more efficient method.

After the survey of made satisfaction to determine the degree of satisfaction of the clients who have made consultations, it is possible to be determined that 100% of the users of the Office would return to consult us and in addition would recommend our service, being satisfied with the answer and receiving answer to its consultation.

### **6.3 Success of consultations**

After all, the proposed measures will be realized, if the investment cost is not too high, and for a short Pay-back Period. This will depend on the installation, energy consumption, etc. We have to know that public services have annual budget, so the inversions will be delay.

Talking about the private promoters, the measures proposals, depends of the investment cost (being the main problem, by the economic conditions of the users), but also depends of bureaucratic processing, which becomes in a problem for some installations.

For example, problems with the installation permission, air generators in a natural park. Nevertheless, the advising includes a contract offer with Financial Companies, which can facilitate the money, with reasonable costs to execute the installation.

Some clients work, specifically, with renewable energy installations, which can offer to their clients a complete service, with advising of OFAER, for example, the transaction of the incentives and aids before mentioned, as well as requirements of homologation and quality in its equipment. In addition with courses and divulging days for this sector, that supposes an education, and also a service of permanent advising, available from the Power Manager of the zone.

Respect to the promoters and constructors of buildings of houses, would be necessary to mention that recently a Real Decree has been approved in Spain on power certification, that it forces to that a building of new construction, or in case of sale or rent, must have power label, which causes that the level of consultations on this subject rises to the being a legal requirement at national level.

## **6.4 Success of consultations**

After all, the proposed measures will be realized, if the investment cost is not too high, and for a short Pay-back Period. This will depend on the installation, energy consumption, etc. We have to know that public services have annual budget, so they will get delay at inversions.

We have clients dedicated at energy, and they visited us usually. However, most of people that asks for information, and when they have take the information instead, the need disappear.

Finally, we can expect that a satisfied customer will recommend us to others. We're going to take an opinion poll about relief, just to see the effects of our working in all this time.

## 7 Conclusions

Every DASU reported the full implementation of their RURASU consultation duties. The survey made clear that significant differences exist in the four DASU regions which result from geographical peculiarities and from the different set-up and structure of the DASUs. These differences have to be put in consideration in the quality evaluation in Task 3.6.

Already now it can be concluded that all DASUs implement their consultation work on a decent quality level and with high success rates. Still, improvement potential is existing both on the effectiveness and on the efficiency of the consultation structure, content and its links to the EPBD.

To analyse this improvement potential in Task 3.8 quality criteria will be elaborated. In view to these criteria every DASU consultation action will be analysed and recommendation for improvements will be given. The DASU related recommendations will then be brought together in an overall guideline for enhanced quality of energy consultation work particularly in view to the European Building Performance Directive (EBPD).