

CB 3 - Institute of systems and robotics - ISR-UC

Country: PT



SUMMARY

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1. Santa Casa da Misericórdia de Arganil

1/ Identification of the partner

PT001 – Santa Casa da Misericórdia de Arganil

Nuno Gomes (nunogomes@scmarganil.pt)

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

Sometimes they leave hot water running without being used in the kitchen
Rinsing is always made with hot water
Personnel uses a lot the elevator
Energy contract is seldom revised
TVs, sound systems and computers are always in stand-by mode
There is not an awareness plan to teach residents and employees about energy efficiency
Lights in the laundry room stay ON even when no one is there
Dryer machines are always used, and they run all day long
All windows in the RCHEP are single glazed
Average shower time of residents is very high

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

Month	Action/Measure	Addressee
Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP
	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Energy efficiency activities implemented in the RCHEP

- *Transcription of Chapter 4.5.2*

On January 2013, this RCHEP installed a biomass boiler mainly for water heating, but they also have space heating infrastructures that use the heated water to maintain comfortable room temperature. The biomass is collected at their own woods, right behind the RCHEP, hence they are saving a lot of money as they stopped buying propane gas that fuelled two gas boilers over dimensioned for the care home's heating needs. They have cut by more than half gas consumption. Besides cooking activities, the gas is only used in a backup boiler for the biomass boiler, integrated in a system that is set for a specific temperature set point, thus guaranteeing thermal needs supply.

One other measure we discussed was the substitution of the single glass windows and its insertion aluminium box with no thermal cut. The manager acknowledged it and recognized that there is a lot of heat lost due to it. In fact, these windows constitute a good percentage of the building envelope, which makes the retrofit more urgent and critical. We had a clear sign this is an actual concern and that it will be done gradually soon.

Table 1 – Supporting Activities

Date	Interaction Channel	Subject
Dec-2010	Meeting	- Collection of data from the RCHEP
Feb 2012	Phone call	- Discussion of issues regarding energy efficiency, financing and best heating technologies
Jun-2012	Meeting	- Presentation of results at PCEEE and discussion on measures to be taken (mainly renewable energy systems) and its return of investment

5/ Behavioural measure for residents and visitors

- A workshop at the RCHEP was done to raise awareness (Chapter 4.5.1)
- Several visibility signs distribution (See Figures 4 to 9 on Chapter 2)

6/ Monitoring when available

Date	RCHEP	Measure	Estimate Savings
2013	Arganil	Biomass boiler installed	50% less gas consumption

7/ Conclusion

See Chapter 5.

2. Lar Quinta Verde

1/ Identification of the partner

PT002 – Lar Quinta Verde

Maria de Jesus (geral@quintaverde.com.pt)

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

Washing machine filters are only checked when the machine is malfunctioning
Residents always leave hot water running while brushing teeth, washing hands, shaving, etc.
Hot water is always used to wash the floor
Rinsing is made with very hot water (above 50 °C)
Actual legislation and normalization is rarely checked
Energy contract is seldom revised
Lack of a training program to aware residents and employees of energy efficiency
Standby of electronic equipment is always ON

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

Month	Action/Measure	Addressee
Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP

	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Energy efficiency activities implemented in the RCHEP

- *Transcription of Chapter 4.4.2*

This RCHEP implemented many measures during SAVE AGE. In terms of renewable energy they installed solar collectors and two photovoltaic panels with sun tracking. To reduce the use of the dryer in the laundry, they have built an outdoor clothes line with a metallic covering at a usually windy part of the RCHEP's property. For the kitchen they bought a combi oven, which is the most efficient way to cook in RCHEPs.



Figure 1 – Implemented energy efficient measures (PV panels, combi oven, outdoor clothes line, solar collectors and skylight)

Table 2 – Supporting Activities

Date	Interaction Channel	Subject
Dec-2010	Meeting	<ul style="list-style-type: none"> - Collection of data from the RCHEP - Advice on renewable energy system's installation
Jun-2012	Meeting	<ul style="list-style-type: none"> - Talk about good practices at the Seminar, namely water consumption reduction and the Greek example of clothes' drying.
Mar-2013	Meeting	<ul style="list-style-type: none"> - Energy efficiency workshop - Discussion about grid connecting conditions o panels. They are not very happy with the return of the investment, thus resenting the investment on PV panels. We were told they are not allowed to use the generated energy at their own facility, and since the grid will only pay for 8800 kWh per year at the legislated price, the remaining produced energy had to go to the grid at no revenue price. Therefore, they have decided stop

		producing energy when they reach that maximum annual electric energy value paid by the utility. Concluding, they have two photovoltaic panels with a high electricity production capacity that is not being used, since the cost of the motors associated with the tracking device and the raise of VAT last year to 23% got too high for the revenue of the maximum kWh they are allowed to sell. They asked us for advice and we will discuss the contract and actual legislation with the utility, since the mini and micro production legal documents have been revised.
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5/ Behavioural measure for residents and visitors

- A workshop at the RCHEP was done to raise awareness (Chapter 4.4.1)
- Several visibility signs distribution (See Figures 4 to 9 on Chapter 2)

6/ Monitoring when available

Date	RCHEP	Measure	Estimate Savings
2012	Carapinheira	Installation of photovoltaic panels	9 MWh/year
2012	Carapinheira	Installation of solar collectors	?
2012	Carapinheira	Construction of outdoor clothes line	6 MWh/year
2012	Carapinheira	Combi oven for the kitchen	50% less energy than regular oven

7/ Conclusion

See Chapter 5

3. Santa Casa da Misericórdia de Condeixa

1/ Identification of the partner

PT004 – Santa Casa da Misericórdia de Condeixa

Jorge Costa (jorge.costa@scmcondeixa.pt)

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

Still have many incandescent lamps
Monitoring revealed a bad RCHEP power factor
Many windows in the RCHEP are single glazed
TVs, sound systems and computers are always in standby mode
Lack of a training program to aware residents and employees of energy efficiency
Elevators are often used by employees when not carrying anything
Energy contract must be revised
Corridor lighting is always ON
High interior set point temperature
It is used to let fridge and freezers doors open while people carry things and get back for more

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

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Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP
	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Energy efficiency activities implemented in the RCHEP

- Transcription of Chapter 4.6.2

In the scope of SAVE AGE we performed, in 2011, a complete energy audit at this RCHEP. A thorough consumption analysis was made. Besides the walking audit and the questionnaires of WP2, we measured the energy consumption of the whole institution and at the partial electric boards which powered kitchen, laundry, room floors, elevators, etc.

After a complete disaggregation of building energy consumption it was presented at the audit report several opportunities of energy rationalization namely: retrofit of inefficient lamps; substitution of magnetic ballasts with electronic ones; compensation of power factor; substitution of single glass windows with double glass; elimination of standby with power stripes; implementation of a detailed list of general good practices (behavioural change); and introduction of lighting sensors on the elevators.

Table 3 – Supporting activities

Date	Interaction Channel	Subject
Jan-2011	Meeting	- Collection of data from the RCHEP
Feb-2012	Meeting	- Presentation of the energy audit report

5/ Behavioural measure for residents and visitors

Workshop will be done

Visibility signs will be delivered

6/ Conclusion

See Chapter 5

4. Centro Rainha Santa Isabel (Cáritas)

1/ Identification of the partner

PT006 – Centro Rainha Santa Isabel (Cáritas)

Isabel Sousa (centrorainhasantaisabel@caritascoimbra.pt)

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

Energy contract must be revised
There are many T8 lamps with magnetic ballast that should be replaced with T5 (electric ballast)
Lights always ON at the reception hall and common spaces with big windows
Corridor lighting and pool lighting ON for 12h/day (all year)
Space heating technology obsolete
Set point temperature of fridges and freezers very low
Standby of the many electronic equipment is always ON
Elevators are often used by employees when not carrying anything
High interior set point temperature
Washing machine filters are never checked

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

Month	Action/Measure	Addressee
Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP
	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Energy efficiency activities implemented in the RCHEP

In the scope of SAVE AGE we performed, in 2011, a complete energy audit at this RCHEP. A thorough consumption analysis was made. Besides the walking audit and the questionnaires of WP2, we measured the energy consumption of the whole institution and at the partial electric boards which powered kitchen, laundry, room floors, elevators, etc.

After a complete disaggregation of building energy consumption it was presented at the audit report several opportunities of energy rationalization namely: switching luminaires and lamps in the reception, kitchen and corridors; introduction of lighting movement sensors at the swimming pool locker rooms; substitution of the exterior lighting switch for an astronomical switch; substitution of existing night surveillance lights with LEDs; substitution of air conditioned equipment at the reception, offices and kitchen; installation of eCubes to reduce consumption in freezers; and installation of lighting presence sensors in elevators.

So far they have only changed some of the air conditioners (reception and offices), but now with the support of the high board administration they expect to go forward with others, namely LEDs.

Table 4 – Activities with the RCHEP

Date	Interaction Channel	Subject
Dec-2010	Meeting	- Collection of data from the RCHEP
Out-2011	Meeting	- Presentation of the energy audit report
Oct-2012	Meeting	- TV news report on the importance of energy efficiency at the RCHEP, showing for instance the solar collectors.
Mar-2013	Meeting	- Energy efficiency workshop

5/ Behavioural measure for residents and visitors

- A workshop at the RCHEP was done to raise awareness (Chapter 4.3.1)
- Several visibility signs distribution (See Figures 4 to 9 on Chapter 2)

6/ Monitoring when available

Date	RCHEP	Measure	Estimate Savings
2012	Coimbra	Installation of 4 multi-split air conditioners with inverter technology	20% less energy than previous technology

7/ Conclusion

See Chapter 5

5. Complexo Seabra de Castro

1/ Identification of the partner

PT007 – Complexo Seabra de Castro

Carlos Matos (scm.anadia@sapo.pt)

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

When showering, water starts running before the elderly takes off the clothes so it creates a warmer room. During shower hot water always keeps running until the end of the bath
Lights are always kept ON when leaving the office
Acclimatization is centralized. All compartments are always being heated/cooled at the same temperature, even though there is no one in
Standby of electronic equipment is always ON
Actual legislation and normalization is never checked
There is not an awareness plan to teach residents and employees about energy efficiency
They use very high temperatures on the washing machines and it's the machine that heats the water
It is usual to let the burners of the stove ON even though pans and pots are not there anymore
Very bad building envelope (windows and roof)

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

Month	Action/Measure	Addressee
Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP
	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Energy efficiency activities implemented in the RCHEP

- *Transcription of Chapter 4.2.2*

Since our partnership, they have introduced double glass on a wing of the RCHEP. Manager said they all felt the difference on the inner temperature, and that heating needs got reduced. Unfortunately, they could not quantify this consumption reduction. Also, they are thinking on remodelling their roof. They have zinc-coated steel roofing, which is extremely inefficient. We explained the advantages of good roof insulation and recommended a ceramic tile's roof with subcovering to enhance the thermal performance. They are seriously keen on such a retrofit, and we were told they would analyse this option.

Table 5 – Supporting activities

Date	Interaction Channel	Subject
Apr-2011	Meeting	- Collection of data from the RCHEP - Advice to retrofit their windows with double glass
Mar-2013	Meeting	- Presentation of a plan of action towards energy efficiency - Advice on roof retrofit

5/ Behavioural measure for residents and visitors

- A workshop at the RCHEP was done to raise awareness (Chapter 4.2.1)
- Several visibility signs distribution (See Figures 4 to 9 on Chapter 2)

6/ Monitoring when available

Date	RCHEP	Measure	Estimate Savings
2012	Anadia	Double glazed windows	?

7/ Conclusion

See Chapter 5

6. Centro Social e Paroquial de Ervedal da Beira

1/ Identification of the partner

PT008 – Centro Social e Paroquial de Ervedal da Beira

Ana Antunes (cspervedal@sapo.pt)

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

When showering, water starts running before the elderly takes off the clothes so it creates a warmer room
Acclimatization always ON when ventilation is being made
Acclimatization is centralized. All compartments are always being heated/cooled at the same temperature, even though there is no one in
Hot water is always used to wash the floor
Washing machine filters are only checked when the machine is malfunctioning
Sometimes they leave hot water running without being used, especially in the kitchen
Rinsing is always made with hot water
Dryer machines are always used
Standby of electronic equipment is always ON
Despite the effort of the Manager, lights are many times ON when no one is in the room

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

Month	Action/Measure	Addressee
Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP
	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Energy efficiency activities implemented in the RCHEP

- *Transcription of Chapter 4.1.2*

During the SAVE AGE project timeframe there have been some measures taken in RCHEP Centro Social e Paroquial de Ervedal da Beira. In fact, this has perhaps the most active board, when it comes to implementing energy efficiency measures, from all 10 Portuguese care homes. In few years they have installed solar collectors, photovoltaic panels and a biomass boiler. But they had some problems with the latter and it was not functioning by the time we had our first meeting to collect information. We recommended a financial program (QREN) to install another one because it was a great measure towards energy efficiency. They followed our advice and were successful on the application. Meanwhile the company that had installed that boiler repaired it and they asked us if their QREN successful application could be shifted to another measure, such as an oil boiler or generator. We explained that it could be possible if the goal of saving energy and CO₂ emissions was still a priority, which was not the case. Hence they re-adapted their initial application for the installation of an absorption chiller to cool the RCHEP. Another measure that the high administration board has already given their consent was the retrofit of the lighting system. They will install LEDs and remove incandescent existing light bulbs.

Table 6 – Supporting phone calls, e-mails and meetings

Date	Interaction Channel	Subject
Apr-2011	Meeting	Collection of data from the RCHEP and advice on biomass boiler
Jun-2012	Meeting	Presentation of results at PCEEE and advice on best cooling system
Dec-2012	Mail	Advice on QREN application
Jan-2013	Phone Call	Explanation on better solutions to invest in
Mar-2013	Meeting	Presentation of a plan of action towards energy efficiency

5/ Behavioural measure for residents and visitors

- A workshop at the RCHEP was done to raise awareness (Chapter 4.1.1)
- Several visibility signs distribution (See Figures 4 to 9 on Chapter 2)

6/ Monitoring when available

Date	RCHEP	Measure	Estimate Savings
2012	Ervedal	Biomass boiler installed	?

7/ Conclusion

See Chapter 5

7. Lar José Luciano de Castro

1/ Identification of the partner

PT009 – Lar José Luciano de Castro

2/ RCHEP main issues

The following table is in the Action Plan and aware for RCHEP main problems

There is no periodic maintenance program
Urgent contract revision
They are not aware of existing energy normalization and legislation
Elevator is always used by employees and residents
They will not invest on energy efficiency if payback is longer than 3 years
Many windows in the RCHEP are single glazed
Space heating technology obsolete
They use very high temperatures on the washing machines and it's the machine that heats the water
It is usual to let the cooking fire on standby or minimum although not cooking anything
Food is kept hot in electric wagons for more than two hours
Standby of electronic equipment is always ON

3/Action plan of RCEHP

We had an initial meeting with the director of the institution where we presented our Action Plan for the RCHEP (see Chapter 6.2 for a general idea of the Action Plan). Then we emphasized the fact there should be a tighten control on energy consumption, with monthly records of expenditures and actual energy consumption values (kWh and m³), and demonstrated how to use the benchmark tool in order to check their progress as an efficient Care Home. We showed them an Excel sheet to exemplify the best way to introduce the energetic data and to learn how to calculate resulting CO₂ emissions. Finally, we discussed existing funding opportunities (even though in Portugal they are scarce) and the possibility to engage on an ESCO adventure. We finished with a work schedule proposal to start acting and reduce their consumption.

The detailed different actions determined in this action plan schedule were:

Month	Action/Measure	Addressee
Mar	Support a workshop about energy efficiency	All staff and some residents in the RCHEP
	Review their energy contracts in order to select the best option	Director or administrative staff of the RCHEP
	Correct, as soon as possible, all main identified bad practices	All members of the RCHEP (staff, residents and administrative personnel)
Apr	Consult the section of additional energy efficient solutions detailed in the Action Plan and initiate a study to assess the possibility of implementing at least one of them	Director of the RCHEP
	Start making a consumption and bill history on monthly basis of electricity, natural gas, biomass, etc., thus having a supportive database to assess different energetic options and technologies	Administrative personnel or Director of the RCHEP
May	Concentrate daily on behavioural issues and implement tips and advices mentioned in the Action Plan regarding kitchen, laundry, offices, bathrooms, corridors, rooms and public spaces, thus assessing behaviour importance.	RCHEP director, administrative staff, employees and residents
June	Present us (ISR-UC) the conclusion of the solicited study, hoping to find green light to implementing some kind of energy efficient measure in one of the following topics: electric energy micro production, enhancement of heating system (water and/or space), equipment retrofit (lighting, washing machines, air conditioning, fridges, etc.)	Director of the RCHEP
...	<p>Completely eliminate identified bad practices;</p> <p>Establish a pro-active dynamics regarding the update on normalization, legislation, financial incentives and existing ESCOs;</p> <p>Add efficient behaviour to the criteria of “Month Employee”;</p> <p>Perform an energy audit and re-evaluate the possibility of additional measures.</p>	Staff and Director of the RCHEP

All main issues of the first table were addressed in the Action Plan, explaining what to do and why to do it, presenting a calculation of estimate savings one could get by changing that bad practice.

4/ Behavioural measure for residents and visitors

- A workshop at the RCHEP was done to raise awareness (Chapter 4.2.1)
- Several visibility signs distribution (See Figures 4 to 9 on Chapter 2)

5/ Conclusion

See Chapter 5