Evaluation Report
Energy Check for low Income Households

EC-LINC

Evaluation Report

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Georg Benke (e7, Austria)

Eva Marx (Berliner Energieagentur, Projectleader, Germany)

Thomas Koisser (eNu, Austria)

Etienne Rubens (KOMOSIE, Belgium

Stuart Hay (Changeworks, UK)

Király Zsuzsanna (Energiaklub; Hungary)

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e7 Energie Markt Analyse GmbH
Theresianumgasse 7
A-1040 Wien
T: +43-1-907 80 26 - 0
E: office@e-sieben.at
W: www.e-sieben.at

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W: http://www.ec-linc.info/

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1 Summary

The present evaluation report of the project EC-LINC report which experiences were made by the IEE project EC-LINC (Energy Check for Low income Households) in the context of energy advice for low-income households. It is intended to provide impulse for further following projects.

The EC-LINC project was funded under the IEE Programme (call 2010). The aim of the project was to review the extent to which the successful German energy consulting program “energy saving check” (“Stromspar-Check”) could be transferred to other European countries. Participants of the project were institutions from Germany (project management), Austria, Belgium, the UK and Hungary. The core of the project approach was the on-site energy consultation on the one hand, which was given directly to the affected households. On the other hand, the delivery of energy saving devices (CFLs, tap aerators, switchable plug-connectors, water saving shower heads, etc.) was an important core element of the project, as this concept was expected to result in direct energy savings in addition to behavioural change.

4 weeks to 6 month after the first visit weeks the households were contacted to get a feedback about the consultation process and the results energy savings. Parallel to this, the project energy consultants were interviewed in order to take account of their impressions and experiences. The feedbacks, as well as the savings achieved are documented in this evaluation report.

The average saving according the energy check depend the country and range from 755 to 2.427 kWh/a and household. The calculated energy cost saving was about € 130.000,- in the first year If it is assumed that various measures related behavioural changes which can be sustained for a number of years (10% after 4 years) and the energy-saving devices can break after a time, the saving is up to 4.380 MWh. To deliver these savings takes approximately up to 5 hours (including travelling and evaluation) and the process wasn’t always straight forward for advisors, often requiring considerable patience and mental effort.

Based on the result of this project the following conclusion can be made:

- The group of low income households consume less energy than the average. So the saving is smaller and it is not so easy to represent the costs from the saving or the consulting. Nevertheless the energy saving is very necessary to reduce the living costs (social aspect). But as the living area per resident in low income households is much smaller than the average, it can be said that the environmental impact is smaller of low income households.

- According the (social situation) in the single households the energy check is very exhausting for the consultants. According to this it is necessary that the adviser are prepare for the situation. An extra training to be not only an expert in energy question, but to have communication skills and to be prepared for the situation is useful.
- The highest saving will be reached by visiting the households several times to influence the user behaviour in the best way. This seems to be very cost intensive.
- Energy saving devices are a very good instrument, to raise the number of participants and the support the energy saving with a small amount of money.

2 Initial Situation

2.1 Definition of fuel poverty

In general, it is assumed that a household is affected by fuel poverty if they spend more than 10% of their household income on energy costs. This is the UK definition, which although understood isn't formally recognized in other countries policies. Energy use is based on the purchase of sufficient energy to ensure in the main living room of 21 degrees Celsius and in the other rooms 18 degrees Celsius[1]. Across Europe Fuel rises are making it more expensive to achieve this level of comfort and squeezing what households can afford in relation to other goods and services.

Even though the British definition of energy poverty is widely understood and accepted, it still has some notable points.

a) The review is fuel-neutral and independent of whether someone with power (rather expensive) or wood (rather cheap) heats. Thus, apply for heating with electricity as energy poor the same household, while not including drops when heating with wood.

b) It is assumed that not the entire living room to 21 ° C is to be heated. At the same time households are also determined by the specification also households that have significant sacrifice in comfort by lower costs and therefore not 10% share of household expenses. In terms of consumption figures, there is a dependency object (good or bad insulated, flat size!). The reference consumption in the theory is computable bar. There are thus large flats rather affected by energy poverty as small apartments.

c) The percentage of 10% of household spending again includes the consideration of household income as a reference and can therefore vary greatly.

d) The cost of electricity for other purposes is completely ignored and only takes into account the heat demand. Thus, there is little no dependence of the concept of energy poverty on the number of residents.

[1] Michael Kopatz, Markus Spitzer, Anja Christanell: *Energiearmut: Stand der Forschung, nationale Programme und regionale Modellprojekte in Deutschland, Österreich und Großbritannien*. PDF, 2,7 MB. Wuppertal Paper Nr. 184 (Oktober 2010). Online nbn-resolving.de

e) It's related to income, so in theory a very wealthy household in a large poorly insulated house could be technically in fuel poverty.

f) A small overcrowded house with several income earners would technically not be in fuel poverty.

g) It is difficult to get data on actual income as clients won't always share this information.

So the definition may be a useful description of the situation of fuel poverty but it not easy to work with it.

There is even a discussion, if fuel poverty is "just" a special form of poverty itself. Within the term fuel poverty the focus is quite strong to the energy suppliers. And in this case, the energy supplier is responsible for the rising energy prices. The building owner with objects with high heating requirements is currently often mentioned in this debate. Figures on how many households are affected by energy poverty mostly deliver by EC-SILC (EU Statistics on Income and Living Conditions - EU-SILC). According to this statistic, in Austria for example about 100,000 households (equivalent to 240,000 residents) are affected by energy poverty.

In some countries fuel poverty is define in terms of fuel debt and households who can't afford to pay their energy company.

In summary it can be said that the existing definition of energy poverty is not entirely clear and accurate determinations only on calculations in specific cases when possible.

It is a common agreement of the project partners, that for low income households the energy costs are an increasing burden, and measure should be provide to this target group to reduce the burden of these cost and the raise the comfort of living.

2.2 Legal Situation

European legislation (directive 2009/72/EC) requires member states to develop national action plans or framework for the recognised increased problem of energy poverty. This directive also required member states to define 'vulnerable customers' and ensure such customers cannot be disconnected at critical times. All customers should be able to choose their own energy supplier, access accurate energy data and change supplier within three weeks. Other directives also look at safeguarding vulnerable customers, outlawing unfair commercial practices and ensuring transparency of contract. An independent body must be set up to deal with complaints.

The EU's Energy Efficiency Action Plan (2011) aimed to reduce energy consumption in households, local authorities and businesses. It includes setting energy efficiency standards. Directive 2002/91/EC set minimum energy efficiency standards for buildings and introduced Energy Performance Certificates (EPCs). Directive 2005/32/EC increased energy efficiency of electrical appliances and boilers and required eco-labelling.

3 The EC-LINC project

3.1 Project Approach

The focus was set clearly on advice no-cost and low cost measures. Promoting larger energy saving measures (e.g upgrading the heating system, modernisation of windows, etc.) was not covered by the project approach. However, KOMOSIE added in their pilot project a country specific add-on, namely “an extra grant and social assistance for roof insulation for tenants-landlords”. The energy check was the starting point for this extra assistance. In the UK advice included larger energy saving measures making result difficult to compare.

3.1.1 On-site consultation

The project approach provided that the energy consultation had to take place directly in the apartments or houses and thus immediately in the living conditions of the people affected. This approach results in some degree in a high expenditure of time, because the travel time for the way to the individual apartments and back has to be taken into account. At the same time, this allows for more details about the specific situation of the affected people.

3.1.2 Energy-saving devices (goodies)

In order to both increase the incentive for households vulnerable to fuel poverty to accept the advisory services as well as to provide immediate help, the consulting approach provides that energy-saving devices (so called “goodies”) with a total value of up to € 50,- will be delivered to households and installed immediately as part of the consultation.

The basic approach of the project was that there will be two visits per household. In the first visit the energy check will be done and the need for the energy saving devices will be checked. Advises will be given how to save energy by changing the behaviour. After about two to four weeks a second visit should be done, to deliver the devices, that are useful for the household and to check the situation once more. During this visit it would be also possible, to install the devices if it is necessary (e.g. Water saving devices).

However, this was not possible in all countries. In the direct implementation of the project ultimately provided a finished package with important energy-saving goodies which were

installed by the energy -advisor himself were possible (eg. Energy saving lamps, water saving shower head) or handed over to the households (eg. thermometer for the living room …). This change in plans in some partner countries was necessary due to financial reasons, as the households were eventually visited only once[2].

Depending on the participating countries, the composition of energy-saving devices was very different. Among other things, electric kettles were only available in Austria. In table 1 a list of devices which were used each country is displayed.

It should be mentioned that water saving equipment (e.g. tape aerator, ..) was not on the list in all countries at the beginning. But the device is one of the most cost effective devices in area with high water costs. Even in the case, where the water is quite cheap (€ 3,5/ m^3 including waste water costs) already 50% of the cost for the hot water are according to water costs.

It should be also mentioned that the devices “Thermometer” was very useful and popular.

Table 1: Used Goodies in the project EC-Linc

	Austria	**Belgium**	**Germany**	**Hungary**	**United Kingdom**
energy saving lamps (in various forms)	X	X	X	X	
window seal; Insulation strip for windows and doors;	X	X		X	
tap aerator	X	X		X	
water saving hand shower; Saving shower head	X	X			
thermostat head; Regulation of the room thermostat	X	X			X
switchable plugbar	X	X	X	X	
timer switch	X	X			
thermo-hygrometer	X		X		
fridge thermometer	X	X	X		
electric kettle	X				
radiator bleed key	X	X			
Thermometer for living room		X		X	
radiator foil		X		X	X
Insulation brush for doors		X		x	
Pipe insolation		X			
Timer for water boiler		X			

[2] It is recommended, that a further energy check project should be designed with two households visits.

Power strip with switch	X
Shower coach (timer)	X
Water saving weight for toilets	X

In order to avoid the installation of bad or low quality products it is important to define the quality standards of the goodies. This is why an agreement about this standard was made in the project. The list with the standards is available on the project website[3]. The standards should frequently be adapted to the newest knowledge on energy-savings equipment.

3.2 Project partners

Various organisations of five different countries were involved in this project. The respective partners are shortly described in the following: It demonstrates that various organizations are able to be involved in the energy check. The main work of the energy check is to organize the management of the whole project.

3.2.1 Austria

The Energy- and Environmental Agency Lower Austria (eNu) is one of the two Austrian project partners and mainly responsible for the implementation of the pilot project in Lower Austria and, in cooperation with a subcontractor (Energie:Bewusst Carinthia), in Carinthia.

The implementation of the pilot project enfolds the design and production of marketing material like leaflets, press-releases and posters in order to address the target groups. Local networks were used to get in touch with the target group, e.g. religious or cultural communities and municipalities. The challenge was to create tailored information-material taking into account the special needs of the target-groups - e.g. translated leaflets and press-releases. The eNu was also responsible for the procurement and administration of energy-saving materials, the administration of consultations, the training and the toolbox for advisers and the development of data collection sheets.

Another part was to assist the other Austrian partner organization – e7 – in developing the data collection sheets and collecting the data for Work Package 5.

[3] The standards for the products are listed in the annex.

3.2.2 Belgium

KOMOSIE is the federation of environmental enterprises in the social economy in Flanders (Belgium). Since 2007 KOMOSIE supports the “Energy Savers companies”. In these social economy organisations lower educated and long-term unemployed people, our “Energy Savers”, are trained and assisted to implement various energy saving interventions, among others energy checks and roof insulation. In total the 32 Energy Savers companies offer all together their services in more than 85% of the municipalities in Flanders. KOMOSIE is also doing research on innovative services the Energy Savers could offer in future (e.g. longer term energy assistance of low-income people, insulation of walls and cellars …).

KOMOSIE’s main responsibility in EC-LINC was to develop the toolbox for the common model of the e-checks in Work Package 3 (training material, software, household report etc.) as well as to carry out a pilot project in Flanders.

For the pilot project in EC-LINC, KOMOSIE combined the execution of energy checks with a country specific add-on, namely “an extra grant and social assistance for roof insulation for tenants-landlords”. The target group of low-income tenants is namely very vulnerable and mostly dependant on the goodwill of the owner to support larger energy saving measures. The energy check was always the starting point for this extra assistance.

KOMOSIE organised and followed up the pilot project in Belgium, but the execution of the energy checks themselves and the extra add-on was subcontracted to 14 social economy “Energy Savers’ organizations”. They visited, all over Flanders, the targeted low income households and provided them energy tips, an energy saving package. In total the pilot project was carried out for more than 200 clients.

3.2.3 Germany

The Berliner Energieagentur is a modern energy service company located in Berlin. As part of our three business divisions Consulting, Contracting and International Know-how Transfer we develop and realize innovative projects that reduce high energy costs as well as CO2 emissions. While rooted in Berlin the BEA launches activities in regional, national and international markets.

On the initiative of the Berlin House of Representatives the Berliner Energieagentur was founded in 1992 especially due to looming effects of the climate change and a decreasing access to fossil natural resources. Therefore, facing today’s environmental challenges the BEA aims at contributing to a more efficient use of energy.

The federal state of Berlin, the Vattenfall Europe Wärme AG, the GASAG Berliner Gaswerke Aktiengesellschaft and the KfW Bankengruppe hold an equal share of 25 percentage of the

BEA. As a public-private-partnership the BEA fulfils a public mandate – nevertheless, all means and methods of doing business are committed to the premise of efficiency. Converging economics and ecology is our daily mission.

The Caritasverband für das Erzbistum Berlin e.V., the social organisation of the Catholic Diocese of Berlin is a non-governmental, non-profit organization, part of the voluntary welfare associations in the German states of Berlin, Brandenburg and partly Mecklenburg-Vorpommern, providing a broad spectrum of assistance regards basic social care, family and health.

Caritas Berlin is responsible for a network of social services like services for family and youth, addiction counselling and drug prevention, migrants, people with special needs like elderly and/or handicapped, disadvantaged and/or poor due to multiple reasons, inpatient/outpatient-services, voluntary work etc. Moreover, Caritas Berlin is involved in lobbying at the political level, especially focussed on poverty reduction.

In Berlin BEA (who was also responsible for (beyond the project management and administration) and DiCV Berlin cooperated with the cooperative building company GESOBAU that is going to modernise 13,000 homes until 2015 in “Märkisches Viertel” in the north of Berlin.

The energy savings advisors were long-term unemployed people that were qualified by a professional energy advisor and received social and technical mentoring by DiCV Berlin and BEA.

The emphasis of the consultations was on heating and ventilation. The clients received a guide on energy efficient living in the modernised home, a temperature and humidity “check-card”, other energy saving devices and an energy saving report.

3.2.4 Hungary

Energiaklub was the Hungarian partner of the EC-LINC project consortium. The main tasks were (beyond collecting and providing material for the implementation of follow-up projects):

- finding and contracting the partners for home energy checks
- training of the advisors
- developing training materials
- Adaptation the methodology of home energy checks (data management, guidelines, client communication, energy saving package etc.)
- quality management of home energy checks (templates, guidelines, support for the advisors)

- monitoring
- project communication, dissemination

The subcontracted organisations (Red Cross Hungary, Habitat for Humanity Hungary, Municipality Óbuda) visited the low income households and provided them with energy tips and the energy saving package.

Main tasks:

- participation on training course
- Recruiting potential and suitable clients (local networks played a key role!)
- executing home energy checks, installation of energy saving package
- collecting agreements about data protection of the clients
- participation in monitoring

3.2.5 United Kingdom

Changeworks is based in Scotland and provides a UK perspective on EC-LINC implementation. Although not running a specific pilot programme, lessons have been drawn from similar projects which Changeworks has developed, many of which work with the same clients. Our projects usually involve referrals from bodies such as local authorities, housing associations and debt advice agencies. As part of the EC-LINC project we co-ordinated research into the background situation comparing different approaches in each participating country.

Changeworks delivers Energy Checks with a range of partners, including the City of Edinburgh Council, Citizens advice bureaus and housing associations. Changeworks is either funded by bodies such as councils or in most cases develops joint projects / funding bids to access government schemes or charitable funds such as the national lottery.

Delivery for each project differs but the process usually involves a referral for expert advice, which usually includes a client visit to assess their situation. The focus of the service is often fuel billing advice (debt) and considering eligibility for grants for insulation. In recent years services have moved from in house expert advisors to also include training and managing volunteers. Some services are on-going subject to renewal of contracts with councils whilst others are time limited (national lottery) where new projects must be developed as replacements."

Main tasks

- Matching and recording information for reference projects to allow comparison with ECLINC partners.
- Providing information on the UK context for fuel poverty and advice projects
- Sharing best practice to inform the ECLINC model

3.3 Software used

The savings per household have been calculated in specific software tools that have been developed in each country. The tools have been tailored to the pilot projects and had all the function of processing the individual data of each household for individual household reports and overall evaluations.

- Austria: The Situation in Austria required a tailored software tool that fits the needs of the Austrian energy advisers, the administrative processes and the specification of the EC-LINC common model. For administration purposes of energy consultations both the eNu and the carinthian subcontractor use special software.

  Therefore the eNu revised an existing excel solution that enabled the adviser to calculate the expected household savings based on the assumptions made by her or him. The excel solution guaranteed a very accurate estimation of the savings expected. The result is a household-report that also enables the adviser to add free text-recommendations. Thus it was very suitable for the needs of a professional energy-adviser.

- Hungary: The consultation process started relatively early.
- Germany: In Germany an excel-tool had been developed The mode of calculation of energy savings potential in this tool is very precise as e.g. times of utilisation of appliances have been taken into account individually to find out about savings potentials.
- Belgium: the Energy Savers companies used software which is already in use by the Energy Savers companies. The use of it was mandatory by the Flemish distribution network operator.
-
- UK: Changeworks has an established database, which contains most features from the software.

More info about the software use and the training manual can be found on the project website[4].

3.4 Training material

Educational content was to support a training program for energy consultants for low-income households. This course comprises all relevant training aspects and is grouped into 12 training modules. The total training material equates to approximately 1.820 minutes of common training and an additional extra 435 min of optional content.

Module	Duration in minutes – Common content
Module A: Introduction	150
Module B: Fuel Poverty	100
Module C: Energy consumption, bills and measurement	170
Module D: Lighting, appliances and stand-by losses on devices	340
Module E: Domestic cold and hot water supply	100
Module F: Heating Energy and indoor climate	200
Module G. Building typology and energy saving measures in the building envelope	110
Module H: The common energy check procedure and data documentation	240 + 1 day of software training
Module I: Installation of small energy and water saving devices	200
Module J: Social and communicative skills	60
Module K: Final examination	100

[4] The download link for this software can be obtained by sending a request by email to KOMOSIE (info@komosie.be) with as subject: "Request for use of EC-LINC software" and a short description of your intention of use.

Module L: Return of Examinations, Feedback and Conclusion	50
TOTAL	**1.820 min.** **+ 1 day of software training**

This means that the total duration of the training in hours (counting in hours of 50 min.) could be about:

Duration for common content	Duration for optional content
36,4 hours ~= 1 week + 1 day software training	extra 8,7 hours

There was flexibility for every trainer to define himself the specific content and duration of his training depending on the specific needs of the trainees.

Additionally a “Training Curriculum” was developed in order to support future professional trainers. The goals are:

- Meaningful definition of specialised focus areas to qualify trainers in the presentation of training material.
- Target group oriented alignment of the training.
- Supporting a practice-oriented alignment of the training.
- Tips and ideas for a methodical approach to implementation.
- Consistent specialised qualification for energy savings advisors at the national/regional level.

3.5 Public relations

Prior to the implementation of the project it was already clear engaging client households would be challenging. Therefore, substantial expenditures were made for communication in order to reach the clients. Different approaches were chosen, depending on the participating countries.

3.5.1 Austria:

The focus of the PR-measures in Austria was on the migrant population.

At start of the project, Turkish cultural associations and organisation from people from former Yugoslawa were specifically contacted as a "door opener" for these groups. This strategy was very time consuming, as it was necessary to establish a new network. However, due to changes in the Austrian project team[5] this path was not pursued further.

Information folders were created both in German as well as in Turkish and Serbian. These folders can be found in the appendix.

Furthermore, specific efforts were undertaken in order to make social facilities aware of the product.

A separate press release which was specifically addressed to migrants' media in Austria was published in Turkish and Bosnian-Serbian-Croatian in order to supplement the information tools.

The most successful strategy was to promote the service hand in hand with heating subsidies, which are granted by municipalities.

3.5.2 Belgium

Because KOMOSIE as a federation has no direct contact with the target group, nor with the local social organisations which are daily in contact with them, we choose to subcontract the execution of the energy checks as well as the collection of addresses to 14 local Energy Savers companies. They all have good contacts with several local social partner organisations. Working together with them is the most effective way of reaching the most vulnerable households. In principle an inhabitant gives already his oral or written approval for receiving the energy check at this stage.

A media campaign, coordinated by the Flemish government, supported us to reach the specific target group of low income tenants (and their landlords) which were targeted in the country specific add-on of our pilot project.

[5] At the end of 2012, the Austrian partner RUSZ left the project team and was replaced by the Energy- and Environmental Agency Lower Austria (www.enu.at). As a result, the region in which the consultation should take place shifted from the city of Vienna towards the rural regions of Lower Austria and Carinthia with a lower proportion of migrants in the population.

3.5.3 Germany

The highlight within the reporting period has been a large press conference on August 8, 2012. The Berlin Senator of Urban Development and Environment, Mr. Müller, attended the conference and showed thorough interest in the project and the possible positive energy saving results for the households. The CEO of the Berlin Energy Agency, Mr. Geißler, the regional manager of the Diocesan Catholic Charities, Mr. Göpel and, of course, the chairman of GEOSBAU, Mr. Frantzen, gave introductory statements on the contents and the goals of the pilot project. The event itself received a very good reception in the media, locally, i.e. “Märkisches Viertel” and regionally, i.e. the city of Berlin.

BEA also presented the project at an information desk on GESOBAU’s “Kinderwiesenfest” (summer event for children living in GESOBAU’s housing stock) on 20th of August 2012 (see http://www.ec-linc.info/de/2012/08/20/kinderwiesenfest-und-energiesparen/) and 15th of June 2013. The energy-scouts presented their activities at several events organised by GEOBAU for the tenants of the modernised housing stock and have been present in tenants’ consultation hours each Tuesday in the GESOBAU headquarters.

GESOBAU produced with the supporting know-how of BEA a “Tenants’ Manual” (D 4.3 d) on how to lead a sustainable life at home. Key issues in the manual are energy and water saving, heating and ventilation and waste prevention. The housing association also produced a leaflet on heating and ventilation with the German partners’ support (not a deliverable, but part of compilation of promotion material).

In 2012 a leaflet has been produced to reach even more households. With an easier language and more pictures a wider target group could be reached. The leaflets were given to households by energy savings advisors, staff of GESOBAU or have been put into the tenants’ letterboxes.

3.5.4 Hungary

Based on the partners’ common policy a profile of the targeted households was defined. Main terms of the target group were the income (around the subsistence level), the living standards and energy consumption.

Recruiting, selection and contacting these households are the tasks of the subcontracted advisors.

Households were reached via different channels: Red Cross Hungary recruited households by their own client list and local networks. Habitat for Humanity Hungary built up cooperation with social departments of different municipalities and local units of churches. The Municipality of Óbuda offered the service for indigent clients. Involved households signed an agreement on taking part in the project and evaluation and gave permission for personal data

management. A lot of data about energy use and behavioural customs were collected by the advisors into one database in excel. A preliminary statistical survey was set out from the database.

3.5.5 United Kingdom

For the reference projects in the UK a wide variety of communications has been used to promote projects. During the period of the ECLINC project the main focus has been on referrals from other agencies such as local authority housing managers, housing associations and advice agencies or mainstream government programmes. This was supplemented with events often with partner organisations.

4 Starting point

4.1 Comparison between countries

Hereinafter a description of key parameters for each of the participating countries is presented in order to provide a basis for a better comparison and evaluation of the situation and the results in the individual countries.

The data of households affected by fuel poverty refer to the results of the surveys that have been carried out at by the regional partner in the households. Therefore, the results might not be representative of the countries, but rather represent the data of the participating households.

4.1.1 Housing situation

The average size of the households affected by poverty is presented in Table 2. When the data of the survey is compared to the national average, it can be seen that the affected households have smaller apartments which are occupied by a greater number of residents. This may result in lower heating costs on the one hand and in higher electricity costs per dwelling on the other hand.

Table 2: Average size of flat of households with low income (LIH: Low income Households)

	size of dwelling		**number of residents per dwelling**		**area per residents**	
	average	LIH	average	LIH	average	LIH
Austria	100,2	75	2,2	2,9	45	26
Belgium		111		3,2		34,8
Germany	94	66,1	2,3	2,2	41	30
Hungary	79	79	2,6	3,2	30,4	24,7
United Kingdom *)	91	81	2,4	2,4	38	33,8

*) *In the UK statistics on household size weren't recorded, aside from number of bedrooms. In general many clients live in smaller one and two bedroom flats, which are smaller than average properties. Statistics are estimates based on research into national average (English figures) for example the majority of the population

spending 10% or less of their income on fuel had the use of 82 m^2 per household[6]. Changes to UK benefits ('the so called bedroom tax') are intended to force low income households in to smaller properties, without spare rooms or where children share.

As the living area per resident in low income households is much smaller than the average, it can be said that the environmental impact may be smaller of low income households.

4.1.2 Properties

The ownership situation is very different[7] between the countries as can be seen in Table 3. The highest rate of ownership of low income households is in Hungary with up to 85%. Most of the low income households are in buildings with three and more flats. In this situation it could be possible to renovate the building but it would be quite difficult to change the energy carrier, as in large buildings there is often used district heating or gas.

Table 3: Ownership of the dwelling with low income households

	type of building		**legal basis**			
	1-2 flats	3 and more flats	tenant private apartment	tenant social housing	owner	other
Austria	19,4%	80,6%	58,1%	27,4%	14,5%	0%
Belgium	47%	53%	33%	19%	48%	
Germany		100%	100%			
Hungary	61%	39%	6%	6%	85%	3%
United Kingdom	40%	60%	13%	43%	21%	23%

4.1.3 Energy Consumption & Costs

The energy consumption of households in the individual countries is shown in the following tables. The results show the given differences between countries and also the extent to which the consumption of low-income households deviates from the average national consumption. The data with respect to the area shows a smaller deviation, as the consumption is divided into smaller areas.

[6] http://www.eci.ox.ac.uk/research/energy/downloads/40house/chapter03.pdf

[7] This statics is according the participant of the energy check during the project EC-LINC and may be dependent from the region / and urban district.

Table 4 displays the costs related to a given amount of consumption. When comparing these data, the different purchasing power of the different countries has to be considered.

Table 4: Energy costs including fixed cost (November 2013)

	Quantity and unit	Austria	Belgium	Germany	Hungary	United Kingdom
Electricity	2.000 kWh/a	444,-	440,-	580,-	432,-	415,-
Gas	12.000 kWh/a	867,-	840,-	792,-	656,-	878
Oil	1.000 l	970,-	855,-	850,-		809
District Heating	10.000 kWh/a	820,-	[8])	744	960,-	N.N.
Water	per household	400,-	225.- - 443,-[9]	493	290,-	500

*) water costs including costs for waste water

It can be seen, that the cost for electricity is about the same in all countries expect Germany. As the average household income is much smaller in Hungary the electricity costs are highest in Hungary according the household income.

Table 5 displays the energy consumption of the households affected by poverty as well as the respective national average. If electric power is used for heating, this amount is included in the value for electricity[10]. Furthermore, it has to be considered that the apartments of low income households are smaller and therefore the heating energy consumption is lower.

[8] District heating is nearly not existing in Belgium

[9] In Belgium a family of 4 p. with consumption of 120 m³ per year pays in between 225 € (1,8753 euro/m³) and 443,20 (3,6940 euro/m³). Source: D.2.1. Background data for preconditions of service (WP2, EC-LINC).

[10] As far as Austria is concerned, it can be assumed that approx. 20% of the electricity consumption is used for heating purposes (heating, hot water supply).

Table 5: Energy consumption per dwelling for low income households (LIH) and for the national average

		Electricity		Other energy (mainly heating)		Energy consumption	
		average	LIH	average	LIH	average	LIH
Austria	kWh/a	4,554	3,625	16,196	10,102	20,750	13,727
Belgium	kWh/a	3,00	3,676	20,500	15,801	24,000	19,477
Germany	kWh/a	3,800	2,230	12,160	15,000	15,960	17,290
Hungary	kWh/a	2,166	2,134	24,236	20,806	26,470	22,940
United Kingdom	kWh/a	4,000	2,769	16,900	11,699	20,900	14,468

Table 6 shows the specific energy consumption per square meter of fuel poverty households in comparison to the respective national average. If electric power is used for heating, this amount is included in the value for electricity.

It demonstrates that the specific energy consumption of low income households is lower than the average. Only in Austria the electricity consumption is a little bit larger. This can be due to the fact that more people live in household.

Figures for low income households offered advice. To allow comparison used energy used mapping data of low income areas (where many clients are found) to estimate consumption.

Table 6: Energy consumption per square meter for low income households (LIH) and for the national average

		Electricity		Other energy (mainly heating)		Energy consumption	
		Average	LIH	Average	LIH	average	LIH
Austria	kWh/m^2 a	44.6	48	162	135	203.3	183
Belgium	kWh/m^2 a		34.5		144		177.3
Germany	kWh/m^2 a	39.8	34.4	127	232.5	166.8	167
Hungary	kWh/m^2 a	28.3	27.0	307	263	335	290
United Kingdom	kWh/m^2 a	40	27.8	169	116	209	145

Table 7 displays the energy costs of households affected by poverty in comparison to the respective national average. If electric power is used for heating, this amount is included in the value for electricity.

It shows, that the heating costs are for low income households smaller than the average households, but that the electricity costs are about the same range as the average. This is not very surprising as the dwelling of low income households are smaller (less heating energy) but more people per dwelling live there. So it can be said, that the comfort living level is lower by LIH.

Table 7: energy costs per dwelling for low income households and for the national average

Unit: €/year		**Electricity**		**Other energy (mainly heating)**		**Energy consumption**	
		Average	LIH	Average	LIH	average	LIH
Austria	€/a	850	723	1,153	840	2,003	1,563
Belgium	€/a	770	808,8	1,517	1,169,3	2,287	1,978,1
Germany	€/a	976	534	1,020	1,120	1,996	1,654
Hungary	€/a	432	432	656	624	1,088	979
United Kingdom	€/a	844	582	1218	840	2,062	1,423

Table 8 displays the specific energy costs per square meter of households affected by poverty in comparison to the respective national average. The table shows that the specific cost from the low income households are little bit higher than the average.

Table 8: energy costs per square meter for low income households and for the national average

		Electricity		**Other energy (mainly heating)**		**Energy consumption**	
		Average	LIH	Average	LIH	average	LIH
Austria	€/m^2 a	8.5	9.6	11.5	11.2	20.0	20.8
Belgium	€/ m^{2}a		7.36		10.65		18.01
Germany	€/ m^{2}a	10.4	8.2	11.8	17.3	22.2	25.5
Hungary	€/ m^{2}a	5.5	4.5	8.3	7.9	13.8	12.4
United Kingdom	€/ m^{2}a	8.4	5.8	12.2	8.4	20.6	14.2

5 Kind of evaluation

5.1 Type of survey

In order to evaluate this type of energy advice an inquiry was carried out both on the client side as well as on the consultant side, which experienced the situation. The survey was complemented by the professional expertise of the project participants.

5.1.1 Client survey

In order to query the impressions of clients, a separate questionnaire was agreed by partners. Subsequently, the questionnaire has been translated into all languages of the participating countries. An aim of reaching 20% of the participating households was agreed (as far as the households were willing to take part). The survey was carried out by the partners via telephone or at a second home visit. The analysis of the questionnaires was carried out by e7.

The survey was adapted in the UK to reflect variances in the data collected from clients and where possible matched against other countries.

The questionnaire can be found in the appendix.

5.1.2 Consultant survey

In order to use the experience of the consultants, a separate survey was carried out which aimed at inquiring the empirical knowledge gained by the consultants while having contact with the clients. At least seven consultants should complete this survey in each participating country.

The questionnaire can be found in the appendix.

The survey did not only comprise responses options which had to be selected but also short open statements had to be analysed individually.

5.1.3 Project partners

The two surveys were supplemented by a critical discussion within the project team and all project partners mentioned the “lesson learned by the project.

The focus of this discussion was put upon considering the experiences from the project implementation for the preparation of the evaluation report.

6 Evaluation

As the same questions were asked in all countries, it could be that one feedback is relevant only in one specific country.

6.1 Selection of the advisers

The recruitment of advisors varied in different countries. In Germany and Belgium established partners and employment programmes were used. In other countries this option wasn't available e.g. Hungary and Austria and other arrangements had to be made to deliver the checks to low income households. The UK used professional advisors and some volunteers in the comparison projects. A major focus of the training stage focused on basic skills and communications to help new advisors re-enter the labour market, through the role of energy advisor.

6.1.1 Austria

During the project in Austria it was not possible to follow the employability aim in the original concept. The original project partner left the project due to compatibility and funding issues. It was not possible to find similar substitute organisations with a similar focus on employability that can train energy advisors,

Instead, as new project partners (eNu) joined the project and provided professional energy advisers, specific experience of working with low income households. As the eNu is engaged in another fuel-poverty project – a lot of experienced consultants were available. The selected advisers went through a half day training course. The content of the trainings was region-specific – taking into account the different local actors and contact points that deal with low income households. The training also included necessary administrative tasks.

6.1.2 Belgium

The subcontracted partners were the responsible for the of selection of the e-advisors. Since they were already experienced e-advisors, no specific selection or training was required for the execution of the pilot project. The basic skills required are communication and social skills, language skills (Dutch language, other languages are a plus because of many visits in

immigrant households), basic calculation skills, and a driving licence. The “Energy Savers” e-advisors also have a unemployment duration of minimum 1 up to 5 years, depending on the social employment program they (have to) fit in.

6.1.3 Germany

All energy advisors who could be acquired by the German partners have been before this point in time long-term-unemployed. However, they showed extraordinary willingness and commitment to get the ‘pilot’ running.

6.1.4 Hungary

The subcontracted partners held the responsibility of selection of the advisors.

The main aspects of selection were communication skills, client management skills, direct connection to the target group and active participation in local networks. There was no requirement of technical experience or profession.

6.1.5 United Kingdom

In the UK Changeworks recruits professional advisors who have relevant experience of working with low income households. There work is supplemented by volunteers, with less in-depth knowledge but more time to work with households. Volunteering offers opportunities to gain new skills and increase employability.

6.2 Situation of the adviser

If and to what extent a specific training of the advisors is required for this target group has been specially queried in the advisors’ survey Advisors were asked about their starting knowledge and training priorities.

In nearly all countries (expect Austria and the UK) the advisers are the opinion that there should be an extra training for the energy check for low income households. In the UK and Austria the majority of advisors had formal training and were experienced, and a minority only want specific extra information on issues such as benefits.

Table 9: Should there be an extra training program for energy adviser for low income households?

	Austria	Belgium	Germany	Hungary	United Kingdom
	%				
Yes	25%	63%	67%	75%	25%
No	75%	37%	33%	25%	75%

The following additional comments were made with respect to this question:

- It seems important and very helpful to me to have a greater experience of counselling and to be emotionally resilient (without being absorbed) as well as to be capable of expressing empathy and tolerance.
- Focus on training advisors, which do not have any experience with marginal groups
- “Several language skill”s are an advantage (2)
- How to handle with (people living in) poverty (for whom energy saving is less of a priority because they have lots of other, more important problems to deal with). (3)
- How to handle with less motivated clients, difficult situations and resistance of the clients (3)
- Knowledge of the whole social and energy landscape in order to contact the right (social) services to help the clients and to refer them to the right services
- Empathy, respect, politeness are important skills
- How to deal with lonely clients
- Clear and easy to understand communication skills (5)
- How to convince clients to apply the energy saving behaviour tips.
- ….

It was acknowledged by all project partners when discussing advisor feedback that energy check process was challenging and many households had complex needs. For this reason advisors needed to understand not just energy but wider social issues e.g. accessing state benefits. It was felt that engaging with low income households was a challenging role that required experience and mental strength. Developing these skills would be challenging for many unemployed people, even if they could relate to the clients situation.

Within the scope of the consultation the advisors were also asked to name important elements to make the consultation even effectively.

- Use tools that look professional such as infrared thermometer, hygrometer, etc.
- energy saving bulbs with E14 thread
- less administrative effort – the protocol takes too much time. Thus it is not suitable for consultations.
- more time and the possibility to convey larger electrical appliances (e.g. refrigerators and freezers).
- Indications of standard for low, high energy use of households
- Energy meters
- The training should have specific examples of similar clients and situations
- Teaching materials to visualise the situation
- Indications of energy use of several electric devices to show the household how it can be done better.
- More and ongoing training of the energy savers to understand the changing situations and to better answer to the questions of the household.
- Thermo graphic camera
- *Better basic knowledge on the topic by customers*
- *Lots of patience*

6.3 Comparison to conventional counselling

The advisors were also asked in what way and to what extend the advice given to low-income households differs from the advice given to other target groups. The difference between the target groups was emphasized, especially with respect to dealing with difficult situations and poverty. Advisors felt**:**

- *It can be challenging to understanding the circumstances of fuel poor households*
- *Dealing mainly elderly persons is challenging and time consuming*
- *Some households are under enormous emotional strain (hopelessness, illness, negligence)*
- *Clients can often be heavy smokers, or live in dirty or dilapidated apartments which are unpleasant to work in. In some cases a debt counselling, social counselling or psychological care is a priority rather than energy efficiency advice. Clients often simply want presents, in the hope this will lead to changes. Change in user behaviour*

is very difficult to achieve even with groups such as older single ladies who are keen participants (second group).

- Because of the language barrier, it is more difficult to make an appointment, and more persuasion is needed.
- Data of the energy use (for example energy bills) are often unavailable (4)
- Sometimes the energy check isn't optional e.g. required by the landlord. The client therefore is less motivated and sometimes distrust the energy savers. (2)
- Many households simply don't understand the advice or find it difficult to adopt despite explanation. (2)
- Energy issues are less of a priority for people with complicated issues. (2)
- *Client consultations require patience and can involve counselling to a person in social needs*
- *Households whose energy bills are paid by the state, often don't under their own use of energy*
- *Barriers in communication due to cultural differences, different languages or social problems*
- May believe that they are beyond help or that there is no help for them, or feel unvalued;
- Can be challenging to engage within a project due to their life being chaotic and other worries/problems;
- Advisor needs to communicate in different ways;
- Often need more support over a longer period of time;May be full of anxiety if they do not have enough money for essential items such as energy bills and food;
- The priority tends to be getting clients onto the cheapest price possible, but even getting this does not necessarily resolve the issue;

  They may not be capable of researching things for themselves such as the best deal from their energy supplier.

The key evaluation finding is that it is important advisors have the training, skills and confidence to work low income households. Communications skills are important as is being able to refer clients for specific help with issues such, health and debts.

6.4 Accessibility of the clients

The question how the clients can be reached by means of the available advisory services is of high importance. Both the consultants (

Table 11) and the clients (Table 10) have been interviewed. A different perspective becomes apparent when comparing the two tables.

Table 10: How did the client become aware of the energy check – opinion of the clients (Multiple answers possible)

	Austria	Belgium	Germany	Hungary	United Kingdom
information from a social office or the local social network	70%	51%	0%	82%	11%
report in newspaper	15%	10%	0%	0%	
informed by the local utility	15%	14%	0%	0%	1,5%
informed by someone else	40%	8%	34%	3%	
order to participate	10%	0%	0%	0%	
other	5%	14%	62%	12%	87,%

In Germany more than 57% from the clients mentioned that they were informed by “other”. This means they have either been informed by GESOBAU or Caritas Berlin. In Germany there was cooperation with the cooperative building company GESOBAU which inform their tenants. After the experience that a broader target group can be reached by addressing households directly through the energy advisors the task of household acquisition has been split between the partners.

In the UK referrals general came through housing associations and local authorities (25%), events (23%), regional government funded home energy advice centre (13%) and advice bureaus (11%). In this respect the project was delivered differently using highly developed referral networks.

There was long discussion within the project group, if households should be obliged to participate (opt out approach). It was generally felt that this would be counterproductive and unlikely that households would engage with the advice given. It was noted however that in some partner countries energy companies and social security providers might make advice mandatory as condition of assistance with bills, and projects should recognise this.

Table 11: How did the client become aware of the energy check - opinion of the adviser (Multiple answers possible)

	Austria	Belgium	Germany	Hungary	United Kingdom
Folder		8%	42%	15%	
information from a social office or the local social network	15%	41%	35%	38%	11%
informed by someone else	16%	7%	15%	16%	1,5%
municipal	69%	17%		37%	
Other		23%	15%		87,5%

The difference between the countries is according to the way of information for the clients in each country.

According to the adviser, the best way to reach the clients is via local networks and other public organisations. These are: church communities, municipals, associations of older people, social markets, social offices, social renting association or social housing company, presentations and events, social and social community development organisations. Experience in the UK suggested targeting of leaflets e.g. placing in the right buildings was also important. Newspapers were mentioned in some instances, but generally it was felt that aside from some local papers this wasn't targeted enough. In the UK it was noted that other projects had also used local radio but this was only relevant to larger projects.

6.5 Reasons for participation

Not only is the knowledge on the various aspects of counselling of relevance, but also the reasons why the clients participated (Table 12). The feedback provides information on how to improve information flows to the target group.

Table 12: Why did the clients take part in the energy check?

	Austria	Belgium	Germany	Hungary	United Kingdom
to reduce energy costs	63,9%	34%	86%	80%	100%
because it was free of charge	24,6%	24%	43%	4%	
to get goodies	9,8%	24%	29 %	10%	
a friend gave me the tip	3,3%	10%	14%	4%	
because some else told us to do it	37,3%	4%	0%	0%	
other	3,3%	4%	0%	1%	

For low income households the main reason all countries to participate are to reduce energy costs but it is also very important that the check is free of charge.

In the UK this question wasn't asked but advisors and project managers believed that the main reason was almost exclusively energy costs and fuel debt.

6.6 Data privacy

The consultants were also asked if problems arose with respect to data and privacy of the clients. In general, this problem is not perceived by the consultants (c.f. Table 12). This was quite surprising for the project partners, but should not be a carte blanche to ignore the important aspects of data protection in the context of counselling.

Table 13: Are most people comfortable in providing you with personal data? (e.g. electricity account numbers, home addresses, etc.)?

	Yes	No
Austria	100%	
Belgium	84%	16%
Germany	100%	0%
Hungary	80%	20%
United Kingdom	100%	

The following comments were given with respect to the question of data privacy:

- At the home visit it is usually no problem as the client has requested help and is willing to disclose information.
- Yes, surprisingly so.
- Most clients are willing to give me all the info I need.
- There have been a few occasions where clients have become suspicious when I ask about income but an explanation of exactly why I need this info usually alleviates any issue – e.g. for WHD qualification or to establish if they are in fuel poverty.
- The majority are comfortable with this after an explanation of why we are asking for the information and what we will use it for.
- If they come from agencies, tend to be used to it.
- Most clients have no problem providing personal details at home visits or over the phone. Often that is after we have built trust but some people seem very happy to give up this information.
- Some are reluctant to provide more personal data like financial information or personal health issues which are often asked for in Trust Fund applications.
- Despite of the careful preparation of data collection and data-safety a few clients showed mistrust and kept some sensitive info: especially income, phone number and e-mail address.

There were long discussions within the project group about requesting and managing data. The mains issues were requesting information on household income and billing data. The results of the survey demonstrate that this is generally not an issue for clients. It was felt care was need not ask for too much information, but that it should be possible to request information on the clients feelings about the service.

Other issues were requesting billing data from energy companies.

All partners acknowledged a fundamental part of the project was complying with national data protection rules. Issues could arise when requesting or passing information to third party organisations and this needed to be robustly managed and communicated to participating households, so necessary permissions were in place.

Rules and guideline show to handle to information should be agreed before the start of the project.

6.7 Used Tips by the adviser

In every participating country, both the consultants and clients have been asked to name the advice given to the individual households. Moreover, they were also asked to evaluate the advice given. On the one hand, this shows which measures are purposeful for this target group, and on the other hand the comparison between the countries displays the different situation in the different countries.

The value indicates how many percent of the households received this advice. It is a kind of indicator and ranking (from the point of view of the consulters) which advises are very useful.

In this chapter the used tips by the adviser are listed.

6.7.1 Austria

1)	washing with low temperature (dishwasher/washing machine)	100%
2)	use energy saving bulbs	100%
3)	optimum temperature for cooling or freezing devices	85%
4)	use of electric kettles instead of pots on the stove	85%
5)	avoiding standby	85%
6)	avoid continuous ventilation, use rush airing instead	70%
7)	avoid prewash, use energy saving programs	50%
8)	take a shower instead of full bath	40%
9)	active mould prevention, e.g. through better ventilation behaviour	30%

6.7.2 Belgium

The following tips are usually given during an e-check, but no statistic has been recorded on how many percent of the households received this advice.

1) Use the thermostat and thermostatic radiator valves to keep your home at the right temperature regulate the temperature in each room separately with these valves.
2) Turning the thermostat down by one degree saves 7% fuel. You save about 667 Kwh (gas) per year.
3) Set the night time reduction in. Keep it at 20°C during the day and 16°C at night (or on the moon) and at least half an hour before bedtime.

4) Turn down the thermostat an hour before you go to bed.
5) If the central heating was installed more than 20 years age, replace it by a condensing heating system will save you about 300 to 400 euros a year.
6) Insulate the pipes of the central heating and warm water in the rooms that are not warmed up.
7) Place reflective radiator foil behind the radiators which have been mounted against an uninsulated outer wall.
8) If you feel drafts from windows or doors, attach a weather strip or draught proofing strips.
9) Air your room(s) each day for max. fifteen minutes with an open window; turn off your heating for this.
10) Avoid additional heating with electricity. This is very expensive!
11) Use a water-saving showerhead. Not only do you save water, but energy too because less water needs to be warmed.
12) Take a shower instead of a bath.
13) Do not keep the taps running while whilst brushing your teeth or washing your hands.
14) Do you have a kitchen electric geyser? Fit a timer onto it!
15) Are you able to adjust the temperature of your water boiler? Set it at 60°C.
16) Use as many low-energy light bulbs as possible.
17) Switch off the light every time you leave the room.
18) Check the energy label when you buy a new appliance: appliances with an A-, A+ or A++label use considerably less energy.
19) Defrost the freezer at least once a year.
20) Turn equipment off completely and when you buy a new device choose one with low standby consumption
21) Insulate the roof / walls / flour of your house
22) Replace singe glazing by High R insulated glazing.

It should be mentioned that the tips in Belgium also includes tips that are not any or low costs. In the other countries it was tried to use only low cost tips.

6.7.3 Germany

These energy savings tips were given to households:

These energy savings tips were given to households:

1) Washing with lower temperature (Dishwasher/Washing machine)		41%
2) Optimal temperature for refrigerator or freezer (7°C/-18°C)		38%
3) When using a tumble dryer: spin cycle	3%	
4) Electric kettle instead of boiling water on the stove		21%
5) Avoidance of standby-modus	28%	
6) Energy efficient lighting	41%	
7) Lowering of room temperature	28%	
8) Taking a shower instead of a bath		31%
9) Economically use of water		28%
10) Airing the room briefly and intensively (inrush airing)	59%	
11) Active avoidance of mould by optimal airing of rooms	21%	
12) Active avoidance of mould by optimal airing of rooms	14%	

6.7.4 Hungary

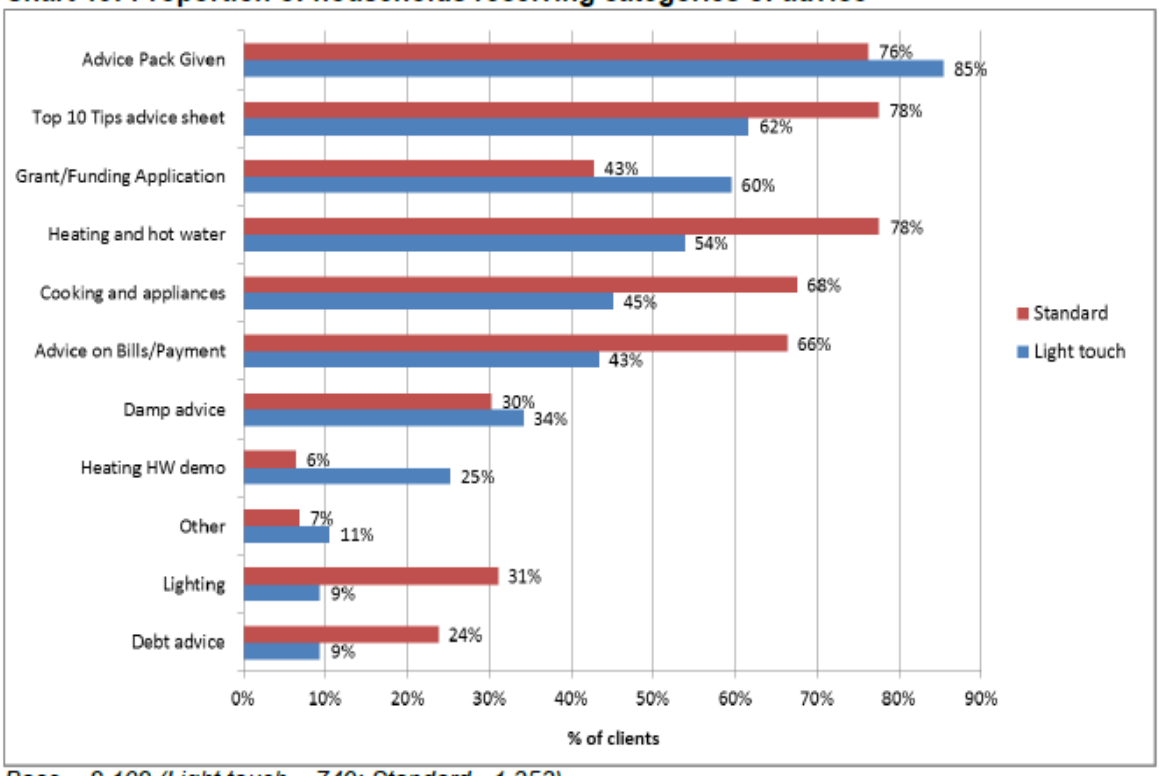
1) Heating regulation during the night and if you leave your home	100%
2) Optimal temperature 20-21 C	95%
3) Efficient lighting	95%
4) Door and window insulation	80%
5) Shower instead of a bath	85%
6) Don’t let run the tap if it’s not necessary	80%
7) Don’t let your electrical appliances in stand-by mode	95%
8) Short and intensive ventilation	80%
9) Place the fridge in the coolest room of the home.	80%
10) Do not put hot food in the fridge	70%

6.7.5 United Kingdom

The most common categories of advice 'light touch' clients received were resources: an advice pack (85%) and 'Top 10 Tips' advice sheet (62%). The advice pack is frequently given to clients, and provides information on reading bills, using heating controls, using prepayment meters, etc. It may also be the only piece of advice some clients get if, for example, they do not return calls from advisors or do not engage with the advice service. The top ten tips are behavioural tips to save energy (e.g. not using standby, etc.).

terms of categories of advice, the most commonly provided advice categories for 'light touch' clients were: a grant/funding application (60%), heating and hot water (54%), cooking and appliances (45%), advice on bills/payment (43%) and damp advice (34%). The categories of advice provided to 'standard' clients are reasonably similar compared to 'light touch' clients. However, 'standard' clients are more likely to receive advice on heating and hot water, cooking and appliances, bills/payment and lighting. They are less likely to receive support on a funding application.

Chart 19: Proportion of households receiving categories of advice



Base = 2,102 (Light touch = 749; Standard =1,353)

Advisors also record how many 'pieces' of advice they give to clients and within which category of advice this is (e.g. heating use, electrical appliances). Chart 19 shows that the

vast majority of clients receive between one and twelve pieces of advice. Not surprisingly, ‘standard’ clients tend to receive more pieces of advice than ‘light touch’ clients. Almost half of ‘light touch’ clients (48%) receive less than five pieces of advice, whereas 50% of ‘standard’ clients receive five – eight pieces of advice. Many clients only receive one piece of advice as they are only sent the advice pack.

6.8 Used tips by the clients

In each country, also the clients were asked to name the 2 most useful tips given. Since the energy saving tips were country-specific, it may occur that advice considered important in one country was not used at all in another country. For instance, electric kettles have been propagated in Austria quite strongly, while this advice was not given in other countries.

Table 14 shows which tips are considered to be relevant from the clients’ point of view.

Table 14: 5 most important tips per country (mentioned by clients)

	Austria	Belgium	Germany	Hungary
changing the light bulbs to CFL	28,3%	19%	38%	53%
door and windows insulation	10%	8%		30%
do not leave appliances in Standby	45,0%	13%	38%	28%
washing up in Basin (not running water)				27%
smart regulation of heating (21°C and less in night)	5%	5%	17%	25%
use of electric kettles	35,0%		14%	
low temperatures and use of energy saving programs for dishwashers, washing machines	23,3%		14%	
rush airing instead of continuous ventilation	20,0%		34%	
save hot water, e.g. taking a shower instead of a full bath	16,7%		24%	
optimize temperature for cooling and freezing devices	13,3%		14%	
Take note of the energy label when buying a new appliance.		23%		
When using a tumble dryer:				

In the UK clients were asked different evaluation questions and provided the following response, which are presented in later sections of the report.

6.9 Utility of the goodies

In each country, both the consultants and the clients were asked to name the most important energy-saving helpers. Since the helpers were country-specific, it may occur that advice considered important in one country was not used at all in another country. For instance, electric kettles have been distributed in Austria, while this approach wasn't taken in other countries.

Table 15 shows according to the country which goodies are considered to be relevant from the clients' point of view. The country results depends from the decision within the country, which devices will be used and the choice of the clients.

Table 15: 5 most important goodies per country (mentioned by clients)

	Austria	Belgium*)	Germany	Hungary	United Kingdom
energy saving lamp	83,6%	83,5%	100%	50%	
window seal	23,6%				
tap aerator	20%	28%			
water saving hand shower	5,5%	36,5%		90%	
thermostat head	9,1%			60%	
plug bar	65,5%	8,1%	0%	80%	12%
timer switch	3,6%	10,8%			
thermo-hygrometer	7,3%		59%		
fridge thermometer	10,9%	77%	41%		
thermometer for living room		70,3%			
electric kettle	32,7%				
radiator bleed key	3,6%	40,5%			
Radiator foil		10,8%		70%	5%
Shower coach		67%			
draught proofing strips		21%			
draught proofing brush for doors		33,8%			
water saving weight for toilet		41,9%			

* for Belgium this statistic has to be interpreted as such: "in x% of the visited homes this goodie was installed"

The provision of similar equipment is not a priority for UK projects service but such items are provided to a small number of clients:

- Powerdown plugs and reflective radiator panels are often given out at events;
- Smart monitors are loaned out on certain projects;
- Reflective radiator panels may also be given out during home visits.

- Card Room thermometers

6.10 Clients feedback

In order to assess the satisfaction with the advice, the clients were asked whether they would repeat the process again future. The assumption was that the clients who are satisfied with the result certainly would be interested in another consultation. In the UK the service was designed to avoid repeat visits and this question wasn't asked. In other countries households were asked whether a follow-up counselling should take place in two or five years.

Table 16: Are most people comfortable in providing you with personal data? (e.g. electricity account numbers, home addresses, etc.)?

	Yes, in two years	Yes, in five years	No	No answer
Austria	100%			
Belgium	60%	30%	10%	
Germany	70%	22%	7%	0%
Hungary	57%	11%	31%	
United Kingdom	NA			

*) * In the questionnaire for Flanders (Belgium) the question we changed the from "in 2 years" to "into short term (eg. after some weeks/months)" and "in five years" into "in longer term (eg. >1 or 2 years)". 5 years is expected to be much too long in Flanders

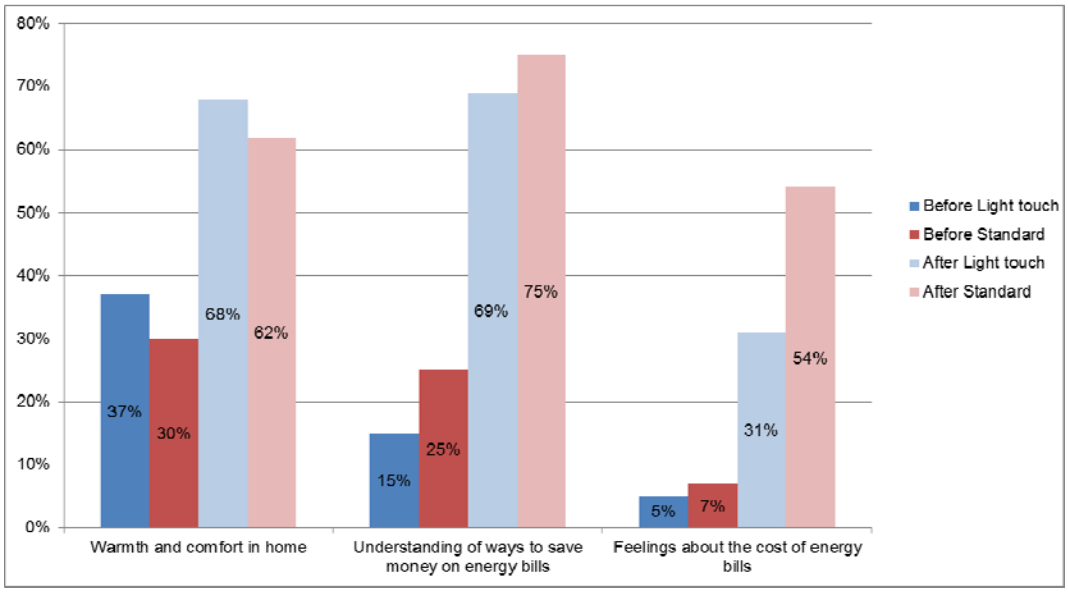
In addition to the aforementioned question, it was also asked whether the counselling led to a change in behaviour. The results are displayed in Table 17.

Table 17: Did you change your behaviour according the energy check?

	Yes	No
Austria	85%	5%
Belgium	91%	9%
Germany	86%	14%
Hungary	94%	6%
United Kingdom	NA	NA

In the UK clients were asked to provide a rating for each question from 1 to 5 where '1' is very negative and '5' is very positive. The chart shows the number of respondents who provided ratings of '4' or '5' (i.e. positive or very positive) to the question. It should be noted that the base size for each question varies[11]. Overall the results show a very high level of client satisfaction: clients felt warmer, more comfortable and better equipped to reduce their energy bills post-advice. In addition, another question highlighted that 87% of 'light touch' clients and 94% of 'standard' clients rated the service as very positive or positive.

Graph 1: Proportion of clients who gave a positive or very positive response to the following issues before the advice compared to after the advice



Base = 210 / 118 / 89 / 47 --- 267 / 426 / 128 / 255 --- 114 / 56 /35 / 26

Over-three quarters of additional comments in the survey (76% out of a sample of 451 comments) were positive, reiterating positive impact of the advice or service provided, measures installed or on the advisor

6.11 Energy savings

Three parallel approaches were pursued for determining the energy savings:

- energy savings based on the tools used

[11] This is because: a) more people completed surveys before advice than after; b) more clients receive advice through standard projects so the sample size is larger for these; and c) base sizes vary between questions as respondents may choose to answer only certain questions.

- assessment through energy consultants
- client assessment
- evaluation after about one year (experience)

The tool comprises the acquisition of tips (behaviour) given as well as an overview of the assigned helpers. Depending on the advice given assumptions on the amount of saved energy are made if the recommendations are implemented. It is also assumed that not every tip will be implemented and that some effects cease to be after two years. Likewise, the use of the goodies is to be evaluated. Both fixed rates and percent savings are used for different aspects of the assessment. These values for the savings that could be achieved are taken from studies or have been estimated by the experts of the team.

The results of the calculations have been reviewed after about 9 months for 5 cases in every participating country. It was noted that the extrapolation slightly overestimated the results by about 12%.

Table 18: Energy cost savings from the energy check

		Austria	Belgium	Germany	Hungary
calculated savings	€/a	125,-	180,- via goodies + 5 to 15% of the energy bill via behaviour change	70,-*) only electricity	n.a.
estimation of the adviser	€/a	125,-	68% estimates > 100,-; 21% estimates >€75 and <€100 11% estimates >50% and <75%	158,- *) with a standard deviation of 102 €	n.a.
estimation of the clients	€/a	83,-/a	n.a.	20 to 50,--	n.a.
check in real life	€/a	110,-	n.a.		57,9
range of saving real life		21,- 572,-	n.a.		€ 0,- - 158,-

In addition, the responses of individual consultants have been recorded:

- No broad-brush statement can be made; the scope is between € 70 and more than € 2000 per year according to my calculations.
- The energy saving is not so important as we can raise the comfort level. So we should also count the raise of comfort.

In the UK estimates based on Energy Saving Trust research related to specific elements of advice or physical measures underpin the calculations. Costs savings where extrapolated to from carbon savings using conversions to kWhs and applying an estimated unit costs based on Ofgem averages (In practice these figures will vary over time and between clients). Figures are therefore indicative and are based on a January 2014 exchange rate.

6.12 Expenditure of time

Both the consultants and the clients were asked to assess the time exposure for the counsel. The clients were asked whether the time scheduled for consultation was enough (Table 19), while the consultants were asked about the time duration of the counsel (Table 20)

Table 19: Was the time scheduled for counsel long enough? (view of clients)

	Austria	Belgium	Germany	Hungary	United Kingdom
long enough	82%	91%	100%	/	100%
too short	18%	9%	0%	/	0%

Table 20: How long does the counsel last? (view of advisors)

Minutes	Austria	Belgium	Germany	Hungary	United Kingdom
< 45		5,3%	33%		10%
45 to 60	25%	36,8%	50%		20%
60 to 75		36,8%	17%		60%
75 to 90	25%	15,8%	0%		5%
>90	50%	5,3%	0%		5%

Concerning the duration of the consultation it has to be remarked that the counsels last less than an hour in Germany, while the duration for consultation session is in Austria last almost twice the time. The reasons could be that instrument is already established in Germany, and thus there is a faster handling of the whole procedure or that the professional energy advisers in Austria take into account a wider range of energy savings topics. Or that in Germany most focus is on electricity and less attention/time is given to the (optional) topic of heating or building shell?

6.13 Language problems

Especially migrants are affected by the problem of fuel poverty. Therefore, it may happen frequently that there are communication difficulties within the scope of counselling.

Table 21: Did you have language problems with ethnic minority clients?

	Yes	No	Don´t know	No answer
Austria	50%	50%		
Belgium				
Germany	67%	33%		
Hungary		100%		
United Kingdom	62,5%	37,5%	0%	0%

In case of an affirmative answer, the respondents were asked to specify their answer:

- Language barrier
- I use the interpreter service on the language line and this helps.
- Language can be a barrier, but this can be overcome with a translator being present at a home visit or advice surgery appt.
- I have worked with a number of clients with little/no English. Also there is a basic understanding of how the UK energy industry works that can be lacking from some foreign clients. In these cases translators are used and advice tends to be simplified and focussed on the main presenting issues.
- Often experience language barriers and need to use interpretation services
- In case of need, younger members of the family were interested too and attended the council session actively, providing translation.
- In some cases there was a certain cultural distance, so that a strong local ties and the desire to maintain a safe (i.e. known) habit of life brought along huge expenditures of energy (time, size and dimensions for TV / heating, washing and cooking habits)
- in migration households, the desire for presentation (clean, comfortable environment, tangible support through relatives) is much higher than in Austrian households (no sense of shame, partly really run down domiciles, hardly any support from relatives)

6.14 Success stories

Within the scope of the survey, the consultants were also asked to tell something about the success stories they experienced in their work. This question was included in the questionnaire in order to obtain important impressions that arose in the context of the consultation for further evaluation. These impressions can be an important preparation for possible situations in the context of counselling.

At the same time, this also shows the differences concerning the access to energy advice in the different countries.

6.14.1 Austria

- Motivation to activate an existing, decommissioned solar panel again to save a tremendous amount of oil consumption during the summer months (redeemed within one year)
- Setting 1 at the refrigerator turned out to be the temperature and not the lowest power
- Changed settings of a boiler towards a lower boiler temperature
- Already presence of energy saving bulbs
- Suboptimal settings for fridge
- An elderly woman in whose dim kitchen I had installed energy saving bulbs phoned me the day after and said: “Today in the morning the sun rose in my kitchen. I now can read my newspaper again. Thanks a lot!“
- The clients were pleased when they realized that the immediate aid tools were free. This was particularly the case as the goodies were installed directly – some clients would not have been able to do these themselves, e.g. installing energy saving bulbs in the flat of a 90-year-old woman.

6.14.2 Belgium

The most successful consulting-experience was:

- The realisation of very much energy saving. With small interventions we realised a saving of 50 % in gas consumption and 30 % of the electricity consumption. For the family this was a saving of € 110 per month!

- An energy check in which we realised a saving of € 500 per year, just by changing the energy supplier[12].
- Every energy check in which useful advices and tips can be given is successful to me.
- An energy check for an old aged couple. They really appreciated the work we had done and learned a lot. They were very convinced to take our tips serious and to try and use them every day again.
- It's difficult to choose one, they all have their charms. But one of the most enjoyable visits was with an old woman who was completely in panic because of a ridiculously high energy bill. During the home visit we could easily detect the problem: one simple phone call and it was solved!
- Every time you know that you've really helped the low-income client to save money in an easy way, the energy check is worth all the efforts.
- During one of the home visits I declared lots of housing problems such as danger for CO poisoning, little children sleeping under nearly open sky, little pests everywhere, … Thanks to the co-operation with social- and housing services the house was found uninhabitable. The family got a new house and after a few weeks, the lady called to ask to have a look at her new house. Full of joy we did the energy check together.
- A household that lived in very bad circumstances, in a house of very low quality. By co-operation with social- and housing services and by referring them to the right services, they got a new house.

6.14.3 Germany

- During modernisation households received thermostatic valves. Some customers never head the possibility to regulate the room temperature without opening the windows. People had to learn to use their new thermostatic valves. We showed them how to find the right adjustment and to turn it off when they air their rooms by opening all windows wide two to three times a day.
- One lady was asked to be a model-household for a press-event. She was very happy to support us, after we helped her with reducing her energy bill.

[12] Changing the supplier is the most cost effect measure in all countries. According same national agreements and the focus to reduce the energy consumption within the project, changing the supplier was not a task within Ec-Linc.

- Some clients were skeptical towards compact fluorescent lamps, because they content mercury. However, in most cases our information on safety measures most of them accepted them and were quite happy with the new lamps in the end.

6.14.4 Hungary

- The power meter tool was a big success in the energy checks. It helped to visualize and calculate the invisible energy consumption. After a metering the visited family decided to phase out an old and rarely used refrigerator.

6.14.5 United Kingdom

- Providing Central heating & hot water demonstration to client has been particularly effective to client who was heating water 24hours a day. Instant saving for the client.
- One client needlessly had her hot water tank on for many hours per day. I changed the settings and believe this will reduce her gas bill considerably.
- An appointment was made for Mrs M to meet the affordable warmth advisor at Penicuik Citzens advice bureua. Due to ill health Mrs M has to keep her heating on for most of the day but because it was old and inefficient, her fuel bills were very high. Unfortunately she did not qualify for heating through the Energy Assistance Package so the advisor recommended her for Midlothian council intervention funding. This was successful and she had a new condensing combi gas central heating system installed in her house at the start of January. This allows her to heat her home at a much more affordable cost.
- Mrs M mentioned to the advisor that she was having breathing difficulties and was attending a respiratory clinic. The advisor contacted Welfare Rights on behalf of Mrs M and asked them to check her eligibility for Attendance Allowance. The application was accepted and Mrs M was awarded Attendance Allowance of £51.85 a week – an increase to her annual income of £2,696. Mrs M commented “The advisor deserves top marks for her advice and support. I am so grateful to Changeworks for helping me - I have told as many people about all the help I got from Changeworks. Thank you so much.”
- Help in addressing gas and electricity debt: Mr E made an appointment with the advisor at Dalkeith CAB. He had problems with mobility following an accident and his only income was ESA. He told the advisor that he had applied but did not qualify for

DLA. He had debt with his gas and electricity suppliers and had received a letter threatening to install prepayment meters in order for them to recover the debt.Support to reduce fuel costs: The advisor contacted the fuel supplier during the appointment and explained that prepayment meters were not a suitable option for Mr E due to his mobility problems. He had good days and bad days and would be at risk of self-disconnection when unable to get out to top up his meters. Alternative payment options were explored and it was determined that payment by fuel direct would be the most suitable. This meant that responsibility for paying the bills was taken out of his hands and the money would be deducted directly from his benefit each week. It also meant that the debt repayment level could be set to the lowest possible amount of £3.40 per fuel each week. Support to maximise income: Mr E was encouraged to appeal against the decision on his DLA. The advisor ensured that the CAB staff was aware of the situation and they took steps to assist him with the appeal. The appeal was successful and his DLA has been backdated to the original application date. This is a good example of collaborative working with CAB.

- Coaching to gain confidence in dealing with fuel suppliers: The advisor encouraged Mr E to apply to the British Gas Energy Trust fund for assistance with his gas and electricity debt. She went through the detail of the form with him and emphasised the importance of explaining the circumstances of how the debt had occurred and what steps he had taken to address it. Setting up the fuel direct payments was an excellent way of showing the Trust that he was willing and determined to address the issue. Mr E agreed to complete the form himself and six weeks later the advisor received a letter from the Trust fund to say that his application had been successful and awarded him with a payment of £669.31 to cover the gas and electricity debt. As Mr E no longer had debt on the accounts, payments by fuel direct were no longer an option. Again the advisor encouraged Mr E to contact his supplier to arrange monthly payment plans for his future gas and electricity usage. What will be the impact for the client: Mr E was delighted with the award from the British Gas Energy Trust fund and felt a great sense of relief that he is no longer in debt to his fuel supplier. Along with the successful DLA appeal he now feels much more stable financially. He made the following comment: ‘Thank you for your support. I could not have reached this point without your help and guidance. I can now move forward with a fresh start.’
- There was one client, unusually, who kept all internal the doors in her house open and had the heating on all the time to keep the sitting room warm. I showed her to how to make changes and reduce the amount of time the heating was on.
- Improving the living conditions of a client by working in partnership: Client’s situation Changeworks received a referral from Cyrenians regarding Miss S, who was living in a council flat with her young child, and was on a very low income. The Changeworks advisor discovered that the property had particularly inefficient storage heaters and

although there was some loft insulation installed in the property, it was not enough. The client had mental health issues and had previously not felt up to tackling these issues herself. The advisor and the client discussed the situation, and what could be done to help her child be warmer in their home at an affordable cost. Project support provided through in depth liaison with the referrer and the client, the advisor determined that two main issues needed to be addressed; ensuring the loft insulation was up to the recommended standard, and finding out what could be done about the clients heating system. The advisor made use of good working partnerships within the council (Housing Property Services) as well. By explaining the extent of the problem, and by looking through previous bills, they were able to produce enough evidence of the inefficiency of the heating system to justify a Council decision to replace the old inefficient storage heaters with a high efficiency gas condensing boiler, and to install a loft insulation top up to bring it up to the recommended level. Impact of support the client was extremely pleased and as a result of the above measures, the client and her child will be much warmer in their home at a more affordable cost. The client remarked: “It’s like winning the lottery! It will make such a difference to my living situation.”

- Helped to set a hot water timer, so that they saved money by not constantly heating hot water discussed fuel billing options with young man in his first tenancy, he seemed to engage and had lots of questions, able to talk about what to expect with his heating system
- Generally, it is billing advice and assistance that gets the biggest results rather than just general energy efficiency advice on its own. EG when you reschedule a client's debt repayments to be more affordable, therefore, increasing their weekly disposable income for other life essentials. Solving billing errors or disputes.

6.15 Unexpected Situation

Within the scope of the survey, the consultants were asked to tell something about their experiences and realizations they had in their work. This question was included in the questionnaire in order to obtain important impressions that arose in the context of the consultation for further evaluation. These impressions can be an important preparation for possible situations in the context of counselling.

6.15.1 Austria

- The daughter of the (Turkish) applicants wanted me to explain to her mother in my function as “country authority” which measures should be implemented in the flat in order to lower the costs for electricity and gas (as the costs are paid by the relatives).
- The client expected me to their outstanding energy bill, which were several thousands of Euros.

6.15.2 Belgium

- A big iguana in the seat next to me
- A lady in lingerie
- A dead guy in the house
- A big fight between the landlord and the occupant
- A household that paid €6000 because they were afraid of CO poisoning from with electric heating. Therefore the windows were always opened, even in winter.
- Lady who ‘wants to stay in touch’ after the home visit.

6.15.3 Germany:

- In the beginning of our pilot project some tenants thought we offer legal advice to file a suit against their high energy bills. It took some effort but it was worthwhile to convince them to take our advice.
- One client thought we would pay his energy bills. He did not call on our services in the end.
- A very dirty and messy household without electricity. A man with mobility problems lived there and did not even have light bulbs in each room. As he rejected any support from other services (domestic aid, day care) we could not help that much with energy consultation. However, he seemed happy about our visit and the distraction.

6.16 Utility companies

The energy consultants were also asked to assess how far the PSCs address the problem of energy poverty. Even if it is just a snapshot, Table 22 shows a quite distinct situation. It

shows that there is still a lack of engagement of the utilities. But the feedback can also stand for that there is less or no relationship between the energy consultants and the utilities. For further project it could be relevant, that utilities are integrated in the check, At least it could be the case, that they are informed about the action and that they are willing to co-operate.

Table 22: Do you think utility companies are doing enough to tackle fuel poverty?

	Yes	No	Don´t know	No answer
Austria	20%	80%		
Belgien*)	N.a.	N.a.	N.a.	N.a.
Germany	50%	33%	17%	
Hungary	0%	80%	20%	
United Kingdom	0%	71,4%	28,6%	0%

*)This question was not asked in Belgium because it was not relevant for the Belgian situation where the (mandatory) responsibility for tackling energy poverty is given to the distribution network operators instead of the (commercial) utility companies.

Asking the advisers about the role of the utilities, also the building-and dwelling owners were mentioned:

- The role of landlords or managers is problematic, because obviously restraint is practiced when it comes to renovation measures (insulation of the attic, basement ceiling, window seal). Some apartments may by now rather described with the derogatory category “dwelling”.

We are the opinion, that this feedback is quite important. At the moment the discussion about fuel poverty has in mind the “bad behaviour” of the utilities. Not very often the behaviour of the landlords or building manager is mentioned.

7 Conclusions

7.1 Project savings

In Table 23 depending on the different countries the average energy saving is listed. The values are based on the interpretation of the results from Chapter 6.11. About 20% of the participating households were interviewed, the result of the energy check was interpreted and also the opinion of the adviser was taken into account. According the short time between advising and evaluation, it was impossible to wait for the energy bill.

Table 23: Average Energy saving (kWh/a) per household from the project

		Austria	Belgium	Germany	Hungary
Electricity	[kWh/a]	361	453	291	65
Heating	[kWh/a]	525	1,974	1,164	690
Sum	[kWh/a]	886	2,427	1,455*)	755

*) This saving is according the data from 15 households, where the information was collected.

In Table 24 it is described how much cost energy costs per household were saved in the first year.

Table 24: saving of energy costs per household (average per country)

		Austria	Belgium	Germany	Hungary
Electricity	€	67.4	99.7	72.7	13
Heating	€	42.8	128.3	69.8	45.9
Sum	€	110.1	228.0	142.5	57.9

According the calculation, about 1.315 MWh final energy was saved by project (Table 25). Taking into account that the measures lasted for several years ((after 4 years effect only 10%), the overall saving will be about 2.893 MWh.

Table 25: Saving (kWh) of final energy per country

		Austria	Belgium	Germany	Hungary	SUM
Electricity	[kWh]	105.051	92.865	71.789	17.225	286.930
Heating	[kWh]	152.775	404.670	287.506	182.850	1.027.891
Sum	[kWh]	257.826	497.535	359.296	200.075	1.314.821

In Table 26 there is the primary energy saved according EC-LINC in the first year[13]. If you assume that the action lasted for several years (after 4 effect only 10%) the overall saving is 4.380 MWh from the project.

Table 26: saving of primary energy per country

		Austria	Belgium	Germany	Hungary	SUM
Electricity	[kWh]	275.234	275.809	186.880	43.063	780.986
Heating	[kWh]	183.330	462.133	345.010	219.420	1.209.893
Sum	[kWh]	458.564	737.942	531.890	262.483	1.990.879

In Table 27 there is the CO_2 reduction according EC-LINC in the first year. If it is assumed that the action lasted for several years (after 4 years 30%) the overall saving is about 800 t CO_2 from the whole project.

Table 27: CO_2 reduction (primary CO_2) from the project EC-Linc in the first year

		Austria	Belgium	Germany	Hungary	SUM
Electricity	T	47	78	29	16	170

[13] The primary energy factor is different according the country and was provided by each project partner.

Heating	T	34	111	58	36	239
Sum	T	80	190	88	51	409

7.2 Experience by the project partners

In the following chapter the lesson from the project partners are described. They were asked, what their experiences from the project are and what is essential for a project like EC-LINC.

to reach the target group:

- To reach the fuel poor / low income households a strong local networks and partnerships with the social sector/organisations that are in direct contact with the target group is essential.
- And/or to get the legal possibility (without privacy problem) to obtain easily address lists of the clients which are in (risk of getting in) energy poverty from the 'social' utility companies14.

Preparation

- The social organisations which are in contact with the low income households should give the energy advisor, if available, extra information on the energy situation (eg. extremely high bill) or relevant social or living conditions of the household (eg. landlord unwilling to invest in the property)) or the specific reasons why the household applies for the e-check (to know his/her motivation). Collecting the real consumption data for a longer period before and after the visit is necessary for preparation and the monitoring. But getting these data is a big challenge as the clients are not aware their consumption. But the experience are that half of the homes these energy bills are not available (the household can't find them …). Valuating the bills needs more personal assistance from the advisors. Inquiry by phone (as we planned and budgeted at the beginning) is not the most efficient way of monitoring.

[14] End of 2013 a Flemish law makes this possible for the addresses of the distribution network operator, namely for 3 categories of target groups: 1) clients with budget meter for gas of electricity installed, 2) clients threatened of being cut of of electricity or gas and 3) the so called "protected" clients (= socially/financially vulnerable persons according to 8 criteria).

- It is could be important that the energy suppliers / utility companies / distribution network operator offer as a service to the energy advisors that the advisors can obtain the energy consumption figures (eg. of last 3 years) in an easy way (eg. via a simple phone call).

Organisation aspects

- Detailed definition of the tasks and competences of energy advisors is necessary from the beginning of the project.
- Making clear the limits of the home energy checks for the advisors and the clients is also a key issue.
- You need to work with partners that can help to deal with a range of issues not just energy.

Selection of the households:

- The home energy check and the saving tools are useful in households around the basis subsistence level (low or middle-low income) but not for people and families in deep poverty. As the energy check is quite often arranged by social office, this fact has to be mentioned to these organisations. A own information meeting could accent this fact and give some information how to decide this question.
    - It has to be clearly communicated that there is only a small number of available checks and the checks should be offered mainly to households with an amount of estimated energy savings.

Selection of the energy adviser

- Employability is very challenging and needs to be delivered through established programmes, being an energy advisor is only suitable for some people, because it's a challenging role. Good social communications skills as well as technical knowledge are essential and can't be learnt as part of a short training course.
- Doing a successful energy check for a low income households (who have many other worries apart from energy saving) requires very different approach and skills than for f.e. a wealthy household who cares about the environment. The execution of energy checks for low income households is more challenging for the advisors in terms of disposing of sufficient emotional strength and social and communicative skills. These "soft skills" tend to be more important for energy check at low income households (next to the necessary technical knowhow). It is important to give enough attention to

this during the training. Working with energy advisor who were formerly unemployed and /or used to be in a financial/social vulnerable situation themselves, can be an advantage, because these experiences helps them to better understand the living conditions and social situation of the low income households and communicate more on the same level than "high level technically oriented professional advisors".

- As the advising of poverty households may be very stressful, after the initial training session, short training sessions programme should be installed/available in order to make a continuous learning for the advisor possible as well as a continuing exchange of experiences and ideas with colleagues. Sometimes even Supervision could be useful.

Home visits

- One home visit is not enough, clients get too much information. Two visits are more efficient and necessary to provide tailored advices and tailored saving package for the households.
- A second home visit could be also very useful, as the households will have more ambition to change their behaviour between the first and the second visit.
- To obtain better results, a longer lasting assistance after the first visit is important. Two or three visits are necessary to provide and follow up tailored advices and tailored saving package for the households.
    - It could be a useful alternative, to cooperate with a group of people for half a year or longer. To reduce the times for three home visits, there could be regularly meetings, were the people learn about energy savings, get information how to read an energy bill aso. A strategy like this could work within migrant groups and the regularly meeting could take place in their meeting houses.

<u>About the installation of devices during the e-check:</u>

- People are attracted by the free energy check because of the combination of free energy saving advices and the installation of free energy or water saving devices at the same time.
- There are a lot of useful devices that can be installed in a home during the energy check. Make the choice and budget of devices you can choose from large enough to about 15 to 20 different devices. But evaluate over time if some devices are of less use (eg. traditional long CFL) and which new devices could be added (eg. LED …).

The installation of energy checks is a part of the energy check which is very suitable for employing / training formerly unemployed person to become a professional energy advisor.

About the results or savings achieved

- Every household is different. A tailored advice and service is necessary. Sometimes the savings will be rather low, but sometimes the advisor can really make a big difference for the low income household (eg. solve misunderstanding about the bill with utility company, change to a much cheaper supplier, convince the landlord to do some investment such as roof insulation).
- The social benefits are the priority rather than CO2 savings which are useful side effective but smaller than for other households.

7.3 Training

The key finding is that the role of energy advisor requires a wide range of skills particularly being able to deal with difficult social situations. This requires training on communications aimed at households with difficult needs. Providing an awareness of where to get other advice was important.

7.4 Follow -up projects

7.4.1 Austria

Together with partners from the Climate&Energy Model Region Lower Austria South (KEM) and the Government of Lower Austria, the eNu implemented a follow-up-project for the successful pilot project of EC-LINC.

The follow-up-project contains 100 on-site-consultations financed by the Government of Lower Austria. The on-site-consultations will be similar to the EC-LINC consultations and are organised by eNu. Based on the experiences from EC-LINC, KEM managed to finance energy-saving-materials for the households. In contrast to the EC-LINC-Pilot-Project every household will get a standardized set of energy-saving-materials. Dissemination tasks will be done by KEM, artwork and wording for the information materials and data-collection sheets are based on the EC-LINC-material and will be provided by eNu.

The follow-up-project focuses on households with migration background.

7.4.2 Belgium

In Flanders the Flemish Government and the distribution network operators will continue the support for the execution of energy checks in 2014. From January 2014 on, it is however foreseen that all free energy checks are executed solely to certain specific target groups of low income people or socially vulnerable persons.

An important legislative support was given on the 29th of November 2013, when the Flemish government accepted to:

- enlarge the target groups for the energy checks with 2 extra categories (people with a budget meter for electricity or gas and tenants with a rent lower than 450 €/month).

- ease the transfer of addresses of target groups of which the distribution network operator dispose of towards the energy check companies in line with data privacy policy.

7.4.3 Germany

The partners target to integrate the pilot project of EC-LINC first of all in the nationwide Stromspar-Check PLUS. This way a medium-term funding can be ensured. It is necessary therefore to establish and maintain a project site in the north of Berlin for Stromspar-Check PLUS. BEA and DiCV Berlin will care for the building-up of a local network with supporters and stakeholders (JobCenter, municipality, social institutions).

7.4.4 Hungary

Energiaklub applied for further financing for European proposal PARES: Partnerships between employment services in cooperation with JOB Personnel Consulting Ltd. and Salva Vita Foundation.

New partnerships are initiated with Hungarian Maltese Charity Service and Autonomia Foundation (related in social and financial projects)

7.4.5 United Kingdom

Based on the findings presented in this report, the following recommendations are made on the continuation of the AWT service and future project delivery.

- **Volunteers:** The AWT has recently started to explore the opportunities of using volunteers advisors, as well as employed advisors. The advantages of this is that it is more cost-effective, volunteers can communicate on a peer-to-peer level and in some circumstances, it offers opportunities to volunteers to gain valuable skills and experience, increasing their employability. Whilst early experience suggests operational difficulties, there is much merit in this approach alongside more conventional advice services.
- **Partnership working and joint-working:** A key strength of the projects has been its close working with multiple partnership organisations such as local authorities, housing associations and charities. This enables the team to work with trusted bodies and reach vulnerable people. More latterly, the team has integrated food and money advice into their service. This joint-working has numerous advantages and should be developed further.
- **Funding:** funding continues to be difficult to find as it is increasingly offered on a short-term basis. Changeworks seek funding from a variety of sources including local authorities, housing associations and charitable trusts. Where possible, longer term projects are preferred which can build up projects.
- **Further feedback for referrers:** Referral organisations were overall very satisfied with the AWT service. One issue, however, was that it would be helpful to receive more feedback on the outcome of advice offered to referred clients.
- **Renewables:** the advice service covers a range of issues. One area highlighted by some advisors was that they are increasingly being asked on renewables. While many low-income households are unlikely to have renewables, this is an area housing associations and local authorities are increasingly exploring for their stock. Therefore, including renewables advice within the services offered may, at some stage, be worthwhile.
- **New media:** the results presented in this paper highlight that project delivery is well-established and is considered to be high quality. There may be merit in exploring the opportunities presented by new media for example, using social media to publicise projects and enabling texts as a self-referral mechanism.

8 Annex

8.1 Survey for advisors

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Energy Check for Low Income Households

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Survey for adviser

Within the IEE Project EC-LINC (Energy Check for low Income Households) we want to know how successful are the energy checks and what can be done in a better way. The Adviser are ask as well as some clients. This survey is for the adviser, which have made home visits to make the energy checks. The same questions are asked in several difference countries to find out the difference of fuel poverty, too.

The results will be presented on the Webside of EC –LINC (www.ec-linc.info).

Name: _____

Country: _____

Date: _____

1. **How did the clients get attention of the service?**
   i. Flyer
   ii. Social workers
   iii. Friends/Neighbors
   iv. Municipal
   v. ……..
2. **What is the best way to reach the target groups?**
3. **Did you get information about the social and housing circumstances of the client before the home visit and how?**

1

Survey for adviser

Within the IEE Project EC-LINC (Energy Check for low Income Households) we want to know how successful are the energy checks and what can be done in a better way. The Adviser are ask as well as some clients. This survey is for the adviser, which have made home visits to make the energy checks. The same questions are asked in several difference countries to find out the difference of fuel poverty, too.

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Name: _____

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1. How did the clients get attention of the service?

i. Flyer

ii. Social workers

iii. Friends/Neighbors

iv. Municipal

v. ……..

2. What is the best way to reach the target groups?

3. Did you get information about the social and housing circumstances of the client before the home visit and how?

4. **What information about the clients would be useful before the energy-check?**

5. **How long lasted an average consultation (only the home visit and not the travel time and the other preparation or the software input afterwards).**

   a) < 45 min

   b) 45 to 60 min

   c) 60 to 75 min

   d) 75 to 90 min

   e) > 90 min

6. **Was it easy to arrange with the households a time for the home visit?**

7. **Who was advised in the households?**

   Equal proportion between Men & Women

   Mainly Women

   Mainly Men

   The whole family!

8. **Do people recognize that they can actively influence their energy-consumption?**

   1. YES / very much
   2. much
   3. Yes / no
   4. .not so much
   5. NO not much at all

9. **What were the most useful goodies for the customers? Create a ranking of the top three!**

(ATTENTION: each partner use a different set of goodies – change it. The table below is for Austria)

Energiesparlampen		
Form	**Leistung**	**Sockel**
Röhre	20 W	E27
Glühlampenform	11 W	E27
Glühlampenform	15 W	E27
Wassersparartikel		
Mischdüse 22x1		
Mischdüse 24x1		
Strahlregler Küchenarmatur		
Adapter M22xM24		
Brauseschlauch		
Wasserspar-Handbrause		
Sonstige		
Schaltbare 3-er Steckerleiste		
Fensterdichtband P-Profil		
Fensterdichtband E-Profil		
Thermostatkopf M28x1,5		
Zeitschaltuhr		
Thermo-Hygrometer		
Kühlschrankthermometer		
Wasserkocher 1,2L		
Entlüftungsschlüssel		

10. What were the most useful advice for the customers? Create a ranking of the top five

(ATTENTION: each partner use a different set of ADVICE – change it. The table below is for Austria)

- Waschen mit niedriger Temperatur bei Geschirrspüler und/oder Waschmaschine
- Keine Vorwäsche bzw. Energiesparprogramme verwenden
- Optimale Temperatur für Kühl- oder Gefriergerät
- Wäscheleine statt Wäschetrockner
- Wenn Wäschetrockner: Besser vorschleudern
- Wasserkocher statt Topf am Herd
- Standby Vermeidung
- Energiesparende Beleuchtung
- Raumtemperatur senken
- Duschen statt Vollbad
- Sparsamer Wasserverbrauch
- Dämmung der Warmwasserleitungen
- Abdichten der Fensterfugen
- Kräftig und kurz durchlüften statt dauerlüften
- Aktive Schimmelvermeidung durch zB besseres Lüftungsverhalten
- Option: Wärmeverluste des Boilers reduziert durch niedrigere Temperatur (ich glaube nicht, dass das oft vorkommt)
- Option: Heizungspumpe? (glaub auch nicht, dass das oft vorkommt)
- Freies Eingabefeld vorsehen für sonstiges – zB Aquarium, Luftbefeuchter, Entfeuchtungsgerät, Vorhänge vom Heizkörper entfernt, etc.....

11. **Should there be an extra education and training for the energy adviser to advice low income households about energy saving.**

Yes

No

12. **What kind of specific training or specific skills does an adviser need for that target group? (Describe)**

13. **Which tools do you need / would you like to have, to make the energy check more successful?**

14. How much energy in average (% and or money) can be saved through the energy check?

15. Is the consultation of that target group more stressful compared to other target groups? (Social situation, Behaviour of the clients,....

a. Yes – Describe why

b. No

16. Did the clients have any complaints because of the data collection (personal and sensitive data)?

17. What was the most successful consulting-experience? Describe briefly the case!

18. What was the most unexpected situation/question?

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19. Do you think there is an awareness of fuel poverty by the utility companies? Describe:

(mainly for Austria)

20. Did you have language or cultural problems during the consultation of households with migratory background?

21. Is there a difference between the energy-consumption-behaviours between migratory and non-migratory households?

8.2 Questionnaire Clients

Questionnaire

PART A: Background Information

The data for part A and B should be available from the energy-check-report, which is the result of the home visit. With these data it shouild be possible to make some national statistic and to compare this information with the national avarage (input for evaluation and stakeholder report).

Why do we want this information?
We have few information about the situation of fuel poverty households. So we get some little statistics about this topic. It is not for any kind of calculation, just to compare the difference between the countries

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General Statistics (if available)
Living situation of low income households, including energy consumption

1. Number of Residents

2. Age of Residents
   < 10 years
   10 - 18 years
   18 - 65 years
   > 60 years

3. Size of the Flat — m^2

4. Type of building
   house
   flat/apartment

5. The resident is...
   tenant of a private landlort
   tenant of a social landlord
   owner

6. Type of Heating (main)

	central heating (incl. district heating)		decentral heating (eg. single oven, boiler)	
	heat	hot water	heat	hot water
gas				
oil				
electricity				
coal				
DH				
wood				
unknown				

7. Energy Consumption / energy costs

	consumption [amount] per year or per month	unit (kWh, m³, litre, kg,...)	cost per month or per year	time (month or year)	no data available	included in the rent
Electricity						
Gas						
Heating Oil						
Water						
DH						
Other (e.g. coal):						
unknown						

page

PART B: Output of the home energy check

a) Energy savings

Energy consumption and energy costs saved according to the energy check.

Source of the information: Calculated according to the result of the check or the e

kWh/year

€/year

litres/year

other

b) Used goodies

What goodies were given to the household?

energy saving lamp
window seal
...
...
...
...
...
...
...
...
...
...
...
...
...
...
other

c) Advice / measures

Which advice /measures were given during the consultation?

advice 1
advice 2
advice 3
advice 4
advice 5
advice 6
advice 7
advice 8
advice 9
advice 10
advice 11
advice 12
advice 13
advice 14
advice 15
advice 16
advice 17
other

d) Other questions

Free place to describe the situation if necessary

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PART C: Client survey

a) *Output of the Home Energy Check*

1. How did the client become aware of the energy check
   - he/she received information from the social office
   - he/she read it in the newspaper
   - he/she was informed by his/her local utility
   - he/she was informed by someone else (e.g. neighbour)
   - he/she was told to participate
   - other

2. Why did you take part?
   - to reduce energy costs
   - because it was free of charge
   - to get goodies
   - because someone else advised him/her to do it
   - because he/she was told to do it
   - other

3. Are you satisfied with the result of the energy check?
   Please value the result using marks 1 (excellent) to 6 (very poor)

4. Did you change your behaviour according to the energy check?
   - yes
     - if yes - where/how
   - no
     - if no - why not

page

b) *How do you assess various elements of the energy check?*

1. Which part of the consultation process was useful for you or where did you learn
   Use the following pattern:
   - 1 very useful
   - 2 useful
   - 3 hardly useful
   - 4 not useful at all
   - 5 advice not received
   - 6 useful, but i missed it

   Discussing the electricity bill
   Measuring/Checking the power consumption
   Questioning the time of use/operation times
   Discussing stand-by consumption
   Installation of energy saving starter package
   The consultation report
   Additional folders etc.

2. Which energy saving measures /advice do you consider the most useful ones?
   Please mention the two best ones.

   measure 1
   measure 2
   measure 3
   measure 4
   measure 5
   measure 6
   measure 7
   measure 8
   measure 9
   measure 10
   measure 11
   measure 12
   measure 13
   measure 14
   measure 15

3. Which energy saving goodies do you consider the most useful ones?
   Please mention the two best ones.

   goodie 1
   goodie 2
   goodie 3
   goodie 4
   goodie 5
   goodie 6
   goodie 7
   goodie 8
   goodie 9
   goodie 10

page

4. Was the consultation long enough (i.e. could all questions be answered or did you
   Please value the result using marks 1 (excellent) to 6 (very poor)

5. How much energycosts for heating and electric power can you save because oft he energy consultation and the use of the energy-saving-tools?

   < €20
   €20 - €50
   €50 - €100
   > €100

6. Did you have a look at the household report?

   yes
   if
   no
   if

7. Did you have a look at the additional written information material

   yes
   if
   no
   if

8. Will you have an energy check in several years again?

   yes, in two years
   yes, in five years
   no
   Why

9. What should be changed?

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8.3 Quality Standards for energy saving devices

MUSS NOCH eingefügt werden

Quality Criteria Energy and Water Saving Devices

CFL Must Criteria:	Size	Colour Temperature	Luminous Flux	Colour rendering Index	Lamp warm up time	Average durability	Premature Failure rate	Switch on/off cycle	Lumen Maintai-nance	Energy Efficien-cy Class	Mercury content
CFL E27 8 W	L < 12 cm Ø < 4.5 cm	≤ 2,700 K (warm white)	≥ 400 lm	> 80 Ra	**cfl with Mercury-Amalgam**: ≥ 60 % after 80 sec. **cfl without Mercury-Amalgam**: ≥ 60 % after 40 sec.	≥ 8,000 h	≤ 2% after 400 h	Durability in hours	≥ 88 % at 2,000 Std. ≥ 80 % at given durability	A	< 3 mg
CFL E27 11 W	L < 13 cm Ø < 4.5 cm		≥ 600 lm							A	
CFL E27 11 W bulb	x		≥ 570 lm							A	
CFL E27 11 W reflector	x		x							x	
CFL E14 8 W	L < 12 cm Ø < 4.5 cm		≥ 400 lm							A	
CFL E14 11 W	L < 13 cm Ø < 4.5 cm		≥ 600 lm							A	
CFL E27 20 globe/bulb	x		≥ 1,000 lm							A	
CFL E27 14/15 W	L < 13 cm Ø < 4.5 cm		≥ 800 lm							A	
CFL E27 14/15 W bulb	x		≥ 800 lm							A	
CFL E27 20 W	L < 16 cm Ø < 5.3 cm		≥ 1,150 lm							A	
CFL GU 10 9 W reflector	x		x							x	
CFL E14 9 W candle	Ø ≤ 4 cm		≥ 405 lm							A	
CFL E14 9 W reflector	x		x							x	

CFLPerformance Criteria:	Size	Lamp warm up time	Average durability	Durability factor	Switch on/off cycle	Mercury	Recyclable packing	Rupture safety
CFL E27 8 W	L ≤ 10 cm Ø ≤ 4 cm	**cfl with Mercury-Amalgam**: 80 % after 60 sec. **cfl without Mercury-Amalgam**: ≥ 80 % after 30 sec.	≥ 10,000 h > 12,000 h	≥ 0.7	≥ 30,000 if ignition time > 0.3 sec.	Mercury is bound in amalgam after switch off	> 65%	x
CFL E27 11 W	L < 11 cm Ø < 4 cm							x
CFL E27 11 W bulb	x							Rupture safety through protective finish
CFL E27 11 W reflector	x							x
CFL E14 8 W	L < 10 cm Ø < 4 cm							x
CFL E14 11 W	L < 11 cm Ø < 4 cm							x
CFL E27 20 globe/bulb	x							Rupture safety through protective finish
CFL E27 14/15 W	L < 12 cm Ø < 4 cm							x
CFL E27 14/15 W bulb	x							Rupture safety through protective finish
CFL E27 20 W	L < 14 cm Ø < 5 cm							x
CFL GU 10 9 W reflector	x							x
CFL E14 9 W candle	Ø ≤ 4 cm							Rupture safety through protective finish
CFL E14 9 W reflector	x							x

Quality Criteria Energy and Water Saving Devices

Further devices:	Must Criteria	Must Criteria	Performance Criteria	Performance Criteria
Fridge thermometer	compact	Marks at ideal temperature: 7℃ for frige and -18℃ for freezer		
Switchable plug connector (single, triple)	up to 3,5 kW		Length of the cable > 3 meters	Cross section in mm² > 2,5
Switchable plug connector (sextuple) overvoltage protection	up to 3,5 kW		Length of the cable > 3 meters	Cross section in mm² > 2,6
Thermo-hygrometer	not solar powered	0-50℃ 20-99% air humidity		
Thermometer	not digital	no mercury		
Time switch	up to 3 kW	24 h or week programme		
Thermostop				
Water saving shower head	7-10 l/min. (electrical hot water generation with continuous flow heaters: 10 l)		no plastic	
Flow restrictor	7-10 l/min. (electrical hot water generation with continuous flow heaters: 10 l)			
Tab aerators	bathroom tab: 4-5 l/min.	outside screw thread (male thread) or inside screw thread (female thread)		
	kitchen tab: 7-8 l/min.	outside screw thread (male thread) or inside screw thread (female thread)		
Water stop for lavatory	high-grade steel, divisible			
readiotor key				
Window seal				
thermostatic valve	kind and technolgy of thermostatic valve, the screw nut must be metal and not plastic			
electricity meters	it should be able to measure a consumption under 3 Watt reasonably			
pipe insulation	material and thickness (diameter at least 2x of diameter of pipe)			
Water measuring cup	Exact units	to use with small appliances the use of a measuring bag is possible as well (to be used more often, as made of plastic		
Stop watch	Easy to handle			