



**Deliverable D6.4: Final Report WP6**

**WP6: Analyse and evaluate the project results**

**Task 6.5: Evaluation Report and Recommendations**

<b>Grant agreement</b>	649669
<b>Project Acronym</b>	SMART-UP
<b>Project Title</b>	Consumer empowerment in a smart meter World
<b>Type of funding scheme</b>	H2020-EE-2014-2015 / HG2020-EE-2014-3 - marketupdate
<b>Project website</b>	<a href="http://www.smartup-project.eu">http://www.smartup-project.eu</a>
<b>Start Date of project</b>	March 1, 2015
<b>Duration</b>	4 months
<b>Due Date</b>	M37, March 2018
<b>Actual date</b>	June 29 <sup>th</sup> 2018
<b>Dissemination level</b>	Confidential
<b>Nature</b>	Report / Other
<b>Number of pages</b>	28
<b>Version</b>	Final
<b>Work package</b>	WP6 – D6.4 Final report WP6
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<b>Keywords</b>	Qualitative and quantitative analysis of data collected

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## Table of content

<b>1.</b>	<b>Introduction.....</b>	<b>3</b>
1.1	The SMART-UP project.....	3
1.2	Which methodology to empower vulnerable consumers .....	3
1.3	Which results and findings .....	5
<b>2.</b>	<b>Benefits of visiting households.....</b>	<b>6</b>
2.1	Lessons learned from the research .....	6
	Strengths, weaknesses and lessons learned .....	6
2.2	Recommendations.....	8
	What support measures could the various stakeholders develop to increase the energy savings impact of consumption information tools? .....	8
	How can we identify the various user profiles? How can we communicate to each of them? .....	10
<b>3.</b>	<b>How to enable households to take action and use the smart meter.....</b>	<b>13</b>
3.1	Lessons learned from the experimentations .....	13
	The main barriers .....	13
3.2	Recommendations.....	15
	What information-based services should be offered to households to encourage them to adopt energy efficient practices in the long term? .....	15
<b>4.</b>	<b>How to involve frontline staff and improve the implementation of smart-meter roll-out.....</b>	<b>18</b>
4.1	Lessons learned from the research .....	18
4.2	Recommendations.....	21
	Identifying households: a territorial approach .....	21
	The identification of households:.....	22
	Convincing decision makers.....	23
	Training of social workers.....	25
	How to conduct a diagnosis .....	25
	In conclusion .....	27



## 1. Introduction

### 1.1 The SMART-UP project

The overarching aim of SMART-UP was to encourage the active use of Smart Meters and In-House Displays by vulnerable customers in France, Spain, Italy, UK and Malta. To do so it developed a **training program** for installers, social workers and other frontline staff in contact with vulnerable people, so that they could inform vulnerable consumers about the benefits brought about by smart metering and advise them on how to use their Smart Meter and In-Home Display (IHD) units.

Besides empowering vulnerable consumers, the project served to get some feedback on vulnerable households' specific needs and on the ways to appropriately communicate with them and help them take profit of smart metering.

### 1.2 Which methodology to empower vulnerable consumers

The SMART-UP pilot was a complex piloting activity to verify the impact of different ways of assisting vulnerable consumers.

Within the large-scale pilot enhanced training and advice was delivered to 1,000 vulnerable households in each country and within the small-scale pilot 60 – 65 vulnerable households per country were divided into experimental groups and specific interventions are delivered to them according to the experimental group.

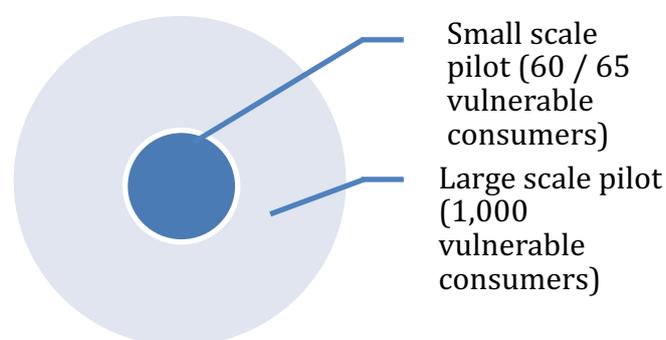


Figure 1 - Large and small-scale pilot

- SMART-UP large pilot – to deliver enhanced training and advice to 1,000 vulnerable consumers in each country,
- SMART-UP small scale pilot – to assist 60 / 65 (according to the country) vulnerable consumers with different interventions.
- The SMART-UP pilot aims to determine the most efficient interventions to support vulnerable consumers facing energy poverty. The impact of the interventions was determined through the comparison of baseline data collected before and after the intervention. As reported in the evaluation reports, an ex-ante questionnaire was built to collect the baseline during the delivery of the enhanced training and advice and an ex-post questionnaire was built to collect the baseline data after a significant period from the delivery of the interventions.

In order to collect significant data, as stated by the SMART-UP work plan, the large and small-scale pilots' time frame (start – end and duration) were different:

- Large scale pilot: the time frame was 6 – 12 months, the ex-post questionnaire was been delivered after at least 6 months from the delivery of the enhanced advice,



- Small scale pilot: the time frame was 10 – 12 months, the ex-post questionnaire was delivered after at least 10 months from the delivery of the enhanced advice and the relative interventions according to the experimental group.

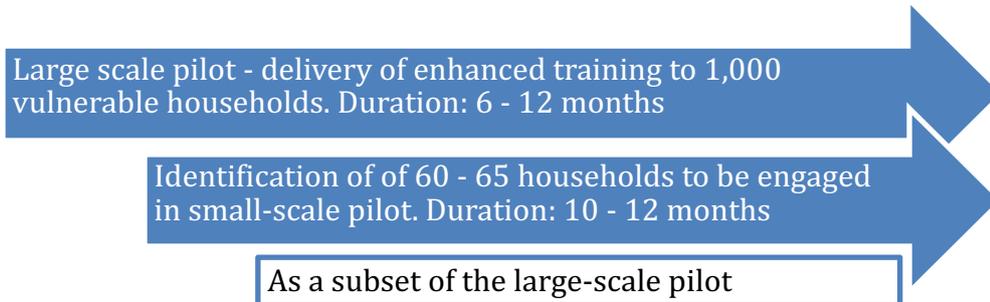


Figure 2 - Timescale of the large and small-scale pilot

- Summarising the SMART-UP pilot consists in:
- Engaging 4,463 consumers, about 1,000 per country, in the large-scale pilot and collecting from all the ex-ante filled in questionnaire. Giving them advice and a leaflet containing information on how to use the smart meter, how to read an invoice, how to make energy savings, how to follow its energy consumption, etc.
- Engaging 60 / 65 vulnerable consumers per country in the small-scale pilot and delivering the specific interventions (according to the experimental group. Giving them personalized advice, helping them to follow their consumption through an energy diary or through an IHD and putting in practices some tips given during the visit.
- Collecting the filled-in ex-post questionnaire for all the small-scale pilot participants
- Collecting filled-in ex-post questionnaire from households engaged in the large-scale pilot to have a total return rate of 20%.

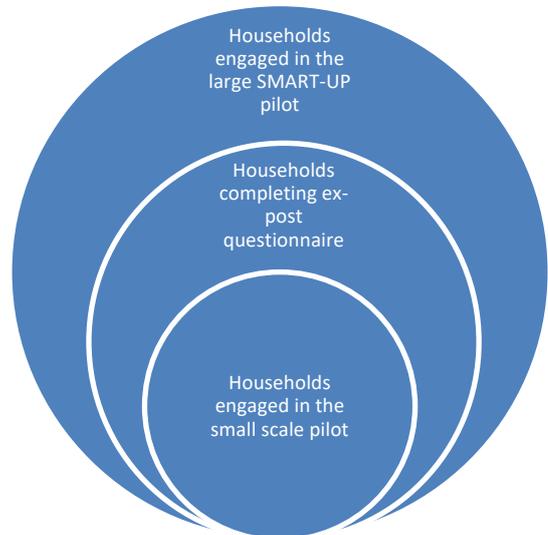


Figure 3 Composition of large and small-scale SMART-UP pilot

More complete information on the actions undertaken is available in deliverables D5.3 and D5.4.

### 1.3 Which results and findings

This report aims to inform social workers, local authorities and all other stakeholders of the strengths and weaknesses of the SMART-UP project methodology. Since the main focus of the project was to focus on smart metering, the current report will take a specific look at the benefits of the methodology that the project used: enhanced training, and how it ensures consumers are receiving a high standard of quality information that can enable them to take action and use their smart meters and IHD (where installed) more effectively.

In countries where the roll-out has not been completed yet, it provides insights around how to involve installers/frontline staff and improve the implementation of the smart meter roll-out.

The main project findings were:

- 1) Most vulnerable and low-income householders require a one-to-one and on-going support;
- 2) Enabling households to take actions is a difficult job
- 3) Involving frontline Staff requires to train them and give them tools.



*Figure 4 Structure of this report*

This report recalls the main lessons we have learnt from this project following these three main axes and proposes recommendations that we have found useful to share with all the actors involved in the fight against Energy poverty.

Other lessons from the project, more specific to certain activities conducted such as the training of social workers or the use of the energy diary are given in the reports of WP 2, 3 and 4.

In this report, we wanted to focus on what actions to take with the households, how to implement them and what can be expected.

## 2. Benefits of visiting households

### 2.1 Lessons learned from the research

Although the field actors have been trained to provide informed advice and visits organized according to a well-defined protocol, it is evident from the analysis of the questionnaires that households on the whole have difficulty in integrating the given advice, fully using the tools provided (guide, energy diary) and follow their consumption on the smart meter or IHD for those who have access to it.

It seems that the visit and the advice (even the most comprehensive advice), provided during the small-scale pilot lead to increased awareness and allowed households to better understand energy efficiency, but did not necessarily generate real behaviour change and consequently did not lead to significant energy savings.

However, it is important to note that that some households involved in the study were already on a very low consumption and were likely to be rationing/limiting their energy use as a coping mechanisms for their energy poverty – therefore their scope to reduce consumption in the first place was limited, and could even have increased as a result of the project (by enabling to achieve greater thermal comfort at home, for example). This therefore raises the important consideration of social equity in relation to actions aimed at carbon reduction.

This section summarizes the lessons learned from the research that partners developed to analyse how the project methodology worked and what can be done in a different way in other future projects. It first talks about the project strengths and weaknesses and uses them to draw the lessons learned.

This sets out the framework used in section 2.2 to draw recommendations.

#### Strengths, weaknesses and lessons learned

Talking about the strengths, research showed that visits and advice made households aware that they could implement simple, easy, inexpensive or free actions to save energy in their homes. In consequence some have implemented them and continue to save money and others, even if they have not incorporated them into their daily routine, they have at least tried them.

Talking about weaknesses, it is precisely the gap between Knowledge and Practice that needs to be understood. In that sense, when we did the post intervention questionnaire we noticed that for instance; while some people **K**new that if they turned off the standby they would save more energy, they did not change their **A**ttitude and

In France, households express the need for more systematic and sustainable monitoring and support. So that the visit could actually lead into a reduction of the problems experienced.

The enhanced advice constitutes a argumentation tool and/or an aid for the negotiation with the landlords and/or with the companies when there are works to engage. This is why the “traces” left during the visit of the frontline staff are widely appreciated (diagnostic report, small equipment, ...).

A person in a situation of energy poverty and affected by aid schemes often expresses a strong demand: that of being “accompanied”.

This implies successive visits, but also follow-up and support in multiple approaches.

Whilst delivery of SMART-UP in the UK did enable and encourage respondents to take actions that would enable them to manage their energy use efficiently, some households were still in a state of heightened vulnerability when it came to affording to comfortably heat their home, and were engaging in practices that could be harmful to both their physical and mental health and wellbeing. Indeed, in such cases, advice may not be enough to enable households to save energy to the extent that they would be able to take the savings as increased levels of warmth at home.

Whilst SMART-UP might have enabled some households to take action to manage their energy use, then, it did not necessarily resolve the precariousness of their financial situation or improve the efficiency of their properties/heating systems (only their behaviours). This therefore could act to limit the extent to which their worries about being able to afford to meet the cost of their energy, even for their basic needs, could be alleviated.



recognized that they did not turn it off and as such did not do anything in practice. To add to that point, even people that did change their Attitude and were doing other things to save energy, they did only sometimes turn the standby off. But why is that? According to Sparks (2017:40 from Chu, 199:39), “the implicit theoretical premise is [that] when given relevant information about a new practice... the audience will likely abandon the old in favour of the new, provided that the new practice is seen to be more rewarding”. In reality, knowing about the need to switch off the standby and its benefits did not seem to be enough to make people do it. What tends to happen with behavioural change is that we assume that people are linear, but humans are complex and switching off the standby is just a minor thing they need to do between a thousand other things.

Firstly, it is important to take into account that for the most part, the households involved consume very little energy in the first place, much less than the average household. This means we need to be aware of the interplay between restricting energy use and energy efficient behaviour.

Secondly, it is necessary to be cautious and, rather than looking to encourage vulnerable households to reduce their energy consumption as a whole, an analysis of household thoughts and behaviours highlights the importance of delivering advice that can encourage positive energy efficient behaviours to reduce consumption and also support households in not decreasing their consumption in areas where harmful or negative rationing practices are being enacted.

Thirdly, whilst behaviour change advice can enable some positive savings to be made (as evident from the results of the project), if energy savings are to be aligned with energy poverty alleviation then interventions should include a range of measures and activities, that could enable households to use the energy required for comfort and wellbeing without unnecessarily over-consuming.

It is also essential to note that measuring such interventions only by energy savings achieved could hide the complex relationship between energy-saving and energy poverty reduction, and necessitates an acknowledgement of additional, positive outcomes such as increased comfort, warmth and wellbeing in vulnerable households. It could also reduce risk of illness within a household by educating consumers around the importance of maintaining adequate thermal comfort, especially where children and older are involved. Ideally, such intervention packages have to include: behaviour change advice, energy efficiency measures (installed thanks to grants or financial aid as we did through the energy savings kit given in France), income maximisation advice and energy debt alleviation, and further advice around supplier/tariff switching and payment options.

When the project is carried out in the same region, a neighbourhood or a group of buildings as it was in France and Spain, the impact of the project is reinforced by the emulation between the households due to the feeling of participating in a collective action. The impact is all the stronger if the engagement is carried out by a local actor, well established, recognized, appreciated in the neighbourhood and being very close to the inhabitants.

Finally, the small-scale pilot allowed us to test engagement tools. Telephone advice does not seem to be preferred on the one hand because households are not always easily reachable and on the other hand they may fear that the call comes from creditor claiming payment of a debt. Reversely, the advice through SMS or WhatsApp posts, as it has been tested in France and Spain, was well perceived by the households, because they are able to identify who is addressing the message, what the previous message was, and they can answer asynchronously at any time. Overall, the most helpful format of advice delivery from the perspective of frontline advisors



and households themselves was the combination of enhanced face-to-face advice, the provision of written/digital information resources and tools, and the telephone aftercare service. Offering advice in multiple formats meant participants with varying needs and vulnerabilities could find the best way of accessing information to suit them.

## 2.2 Recommendations

### What support measures could the various stakeholders develop to increase the energy savings and impact of consumption information tools?

**Stakeholders at both local and national levels have a key role to play in supporting the roll-out of smart meters, in contributing to their success and ensuring that information-based services lead to energy savings**

Experience gained on information feedbacks shows that support actions from local and national stakeholders are necessary to ensure that the meter and associated consumption information is used and adopted by households.

Examples of support activities include: communication and awareness-raising, energy literacy programs, improving billing, community-based actions such as local challenges or neighbourhood comparisons...

In particular, local stakeholders (local authorities, NGOs, social landlords, social workers, etc.) can set up new actions during the roll-out phase, or direct households towards existing energy saving programmes.

**Stakeholders can take part in communication around the meter. Giving timely information and being clear about what consumers and citizens should expect is key to success**

Communication about the meter should call and maintain users' attention by informing them about the features and services that will be provided to them in the future. A balance must be struck between:

- On the one hand, communication about the meter itself. It should not hold any empty promises and highlight the immediate benefits to users, in order to establish trust between household and the operators in charge of roll-out.
- On the other hand, communication about the wider challenges and upcoming changes in the energy sector. It should explain how these changes will affect consumers and their relationship with operators, in order to ensure they understand the challenges the meters will help to overcome, and the reasons why they need to adapt their consumption practices. Communication should convey the message that society in its all is mobilising around energy.

Communication should start before roll-out and be delivered at key occasions during the roll-out process. Within this process, installation of the meter in people's home is a key stage that bears the risk of user alienation if it is poorly managed, particularly in terms of communication.

Feedback from frontline workers involved in delivering SMART-UP in the UK indicated that this package of advice could be further improved upon by delivering the intervention as close to the time when households received a smart meter as possible and providing a more holistic intervention that could cover multiple aspects of a household's relationship with energy and the energy market (not just smart meters). Furthermore, including additional advice delivery formats would allow even more households to be engaged by the project (such as producing digital content that could be viewed online or on the television).

At the same time, frontline workers raised concerns around the promotion of smart meters to vulnerable households at a time when smart meter functionality may not allow them to switch suppliers in order to access the best deals. Importantly, they also picked up on changes that energy suppliers should implement in order to better meet the needs of vulnerable energy consumers - including delivering more detailed, tailored and effective



The installer needs to be trained in the technical aspects as well as the relational aspects and in terms of communication around the project. They need to deliver a coherent, positive message.

Who should communicate? The question of the nature of the messenger is important. The "right" messenger (i.e. the messenger who is the most capable of creating a positive attitude) will not necessarily be the same in each community. Local contexts should therefore be taken into account, however there is no doubt that social workers could provide targeted support to the energy poor cohort.

**Support programmes led by stakeholders should be coordinated. Since they require significant human resources and time, focusing on target cohorts or households is key**

A major benefit of community-level programmes is that they allow for social interaction, assistance and moral support, as well as emulation, prompting and social pressure. These are efficient drivers of change of consumption practices in the domestic sector, and the SMART-UP case studies show that these interventions can lead to significant energy savings. Their financial and resource cost can however, be relatively high. Consequently, it may be wise to target through these actions the households that are high consumers, or which favour initiatives led at the community level rather than at household level individually. Indeed, as has been observed in France, the fact that the action took place in the same neighbourhood and that it was presented to the households as a collective action, this has made it possible to strengthen the exchanges between households and the emulation.

**For greatest possible efficiency, all support programmes aiming to promote energy savings must be coordinated at local level**, bearing in mind that the "stacked" programmes are those which seem to offer the best outlook.

Information-based services are also particularly interesting when they take place in some of the stakeholders' wider energy-saving strategies. For instance, they can complement action taken by a social landlord to improve the performance of buildings and installations.

In the UK, NEA found that trusted intermediaries are well equipped with the necessary knowledge and skills to reassure, educate, advise and guide householders, and without this here is a risk that vulnerable consumers will, at best, miss out or, at worst, self-ration. The SMART-UP training that was delivered in the UK through partnerships was highly successful in engaging frontline workers on the issue of the smart meter roll out, and in enabling them to effectively communicate advice around using a smart meter and IHD to the households that they work with. NEA would therefore recommend a continued and wider roll-out of similar training to frontline workers likely in need of further support to engage with and make the most of their smart meter and IHD.



## How can we identify the various user profiles? How can we communicate to each of them?

**There is not one single household when it comes to energy consumption. Therefore, there should be more than one action developed to help them save energy**

Households have different **capacities** and **motivations** when it comes to adopting low-energy practices.

The **households' ability to take action to reduce their energy consumption** may, in particular, be severely limited by:

- The fact that they have low consumption from the beginning (households with a limited energy usage, already low-consuming households for economic reasons...),
- The set-up of the dwelling and its equipment (heating, hot water production) which may limit what they can actually do,
- Constraints related to the needs of families and the organisation of household chores, particularly when they have children,
- The fact that measures have already been taken to make the home and installations more efficient.

Households are also "**motivated**" to reduce their energy consumption to a greater or lesser extent, depending on their situation

A qualitative analysis would have been very useful to follow the second questionnaire. The research helped us to see what is already known in research methods, that sometimes numbers just indicate part of the answer but don't give the full picture. For instance, when asking if households were concerned about paying the bills due to economic concerns or environmental concerns just provides information about these two specific terms but does not indicate other why they are specifically worried about. In addition, it might be that a household is not worried about paying the bills but because in order to pay them it eats less quality food. These will not be seen in a quantitative questionnaire. Furthermore, asking quantitative questions we were also shaping the answers: maybe a household would have never thought about the environment but since the question is there it answers that she/he is concerned about it.

In Italy the situation encountered by the trained frontline staff when delivering enhanced training to the vulnerable consumers was very different:

- 1) Households in deep energy poverty – in these household energy saving is not to be considered as a solution as they already have reduced to the minimum (and even below the minimum standard threshold). In these cases, households are well aware of their consumptions and, compatible with their economic situation, have already eliminated all energy wastes. Usually in these cases, there are margins to reduce energy consumption related to old appliances or inefficient conditions of the apartment – however both these interventions require a sum of money which the household cannot dispose. In these households usually the energy contract in force is the most convenient on the market.
- 2) Households in energy poverty or at risk of energy poverty – these households are in a condition similar to the case above but there may be margins to eliminate energy wastes and there may be margins to make some small energy efficient investments (such as changing the light bulbs or even buying a new efficient appliance). In these families there may be margins to reduce energy expenses by switching energy contracts as in some cases the one in force is not the most compatible to the energy use in the household.
- 3) Vulnerable household – in these households there usually are margins to reduce energy consumptions and energy costs as the vulnerability is due to social rather than economic reasons.

According to this diversified situation, also the enhanced training and the support measures provided by the frontline staff should be customized to the specific "energy poor / vulnerable" segment.

In general, frontline stakeholders should be more engaged in delivering information on smart meters and energy efficient – saving measures to the overall target.

Since the start of SMART-UP, further to the SMART-UP pilot, other pilots and initiatives have been implemented to tackle energy poverty showing the increasing phenomena in Italy. However, the initiatives are carried out on individual basis and not in a systematic and coordinated manner and not always with the involvement of frontline staff. A coordinated and systematic plan to tackle energy poverty should increase the impact of the initiatives without the need to reinvent the wheel and frontline staff should have a key role as they are the one working in field.



and personal values. Moreover, the nature of motivations for saving energy may be highly variable.

The financial aspect is paramount for a great part of households, but it is not the only motivating factor. There may be an environmental motivation, a desire to respond to a new social norm, that of participating in a collective effort for the common good. Energy-efficient practices are diffused when their visible benefits are multiple and go beyond the energy: practicality, time saving, conviviality, comfort, social recognition, etc.

A collective leverage in particular deserves to be mobilized because it gives the feeling of working for a wider cause. Although vulnerable households are under greater financial pressure than the other categories, they are nonetheless sensitive to these motivations, which appear to be less direct. Indeed, their willingness not to be stigmatized, to be more integrated, to participate like others in the efforts of the community, are drivers to remember.

Other motivations to act which are not intrinsic but which can be put benefiting from information on consumption are: an attraction for the playful approaches, or for the participative and collective approaches creating social link. In particular, it seems that this may be the case in collective housing, the configuration being conducive to a certain proximity between inhabitants. All of these parameters explain what measures households are ready (or not) to take to reduce their consumption in response to an energy efficiency programme (some will change their routines, some will purchase minor equipment, some will invest in more costly measures...) and to what advice they may be receptive.

Programmes, messages and services should therefore be adapted to the diversity of households. This diversity has to be captured prior to, or during roll-out of a programme through questionnaires to gain more insight into their situation and their relationship to energy. Questions must cover, for instance, past behaviour and obstacles standing in the way of taking action.

Socio-demographic characteristics are not enough to understand households' relationship to energy. The most promising segments take into account:

- **Household's relationship to energy and reasons for action:** categories could include, for example: people who give priority to comfort and practical aspects above all / people looking to improve efficiency for a given level of comfort or a given situation / people showing high level of ecological awareness / people motivated by financial considerations in all energy-related decisions / people already experiencing shortages or reduction in comfort because of low income / people with a low consumption and a lack of interest in energy;
- **Obstacles to taking action:** the following aspects can, in particular be considered: dwelling's occupation status / characteristics of the home and its equipment / composition of the household / income level / time available considering lifestyle / consumption level / beliefs, knowledge and know-how;

Ecoserveis believes that is important to empower the consumer and see it less as a number but understand the full complexity of their social situation. For future projects we will need to shift the question: "how can they change their behaviour?" to "what do we need to change, what assumptions and what is our behaviour towards them?" By asking and interacting and seeing how could be more useful we might be able to achieve more changes. That said, it is true that knowledge transfer has widely helped people on the project and that is why energy consumption has also decreased. In addition, users and energy agents are really happy about the program. There is, nevertheless, always room for improving and there is also always a need to be critical in order to achieve even better results.



- **Type of action the household is more likely to undertake** (investment in equipment versus change in habits, or both).

One way of handling the diversity of profiles is to design services and programmes that can allow personalised approaches. Another way is to provide choice between several different options, whether in terms of information channel or information content, and to refer to the different motivations households could have in terms of energy saving. The context of freedom is also important: by letting users choose between several different services, we elicit a positive attitude and adapt to their requests.

Amongst all the different household categories, one category that appears relevant to identify, and towards which specific measures should be targeted, is that of households with high energy consumption, which have not yet taken any measures to save energy.

In terms of low-income households, one needs to be careful when encouraging them to reduce their energy consumption as it is possible that they are already consuming low amounts of energy or that they feel encouraged to reduce their level of comfort in response to an information programme. These households generally benefit less from information-based services on consumption than others, especially when they already find themselves in restrictive situations. Vulnerable households cover different profiles that have to be well apprehended to define specific approach in terms of support.



### 3. How to enable households to take action and use the smart meter

#### 3.1 Lessons learned from the experimentations

This part of the report is devoted to the positive aspects and also the limits observed in the information provided by smart meters and their ability to generate more virtuous households' behaviours. The project identified a number of biases and led to recommendations to better accompany households to reduce their energy consumption.

#### The main barriers

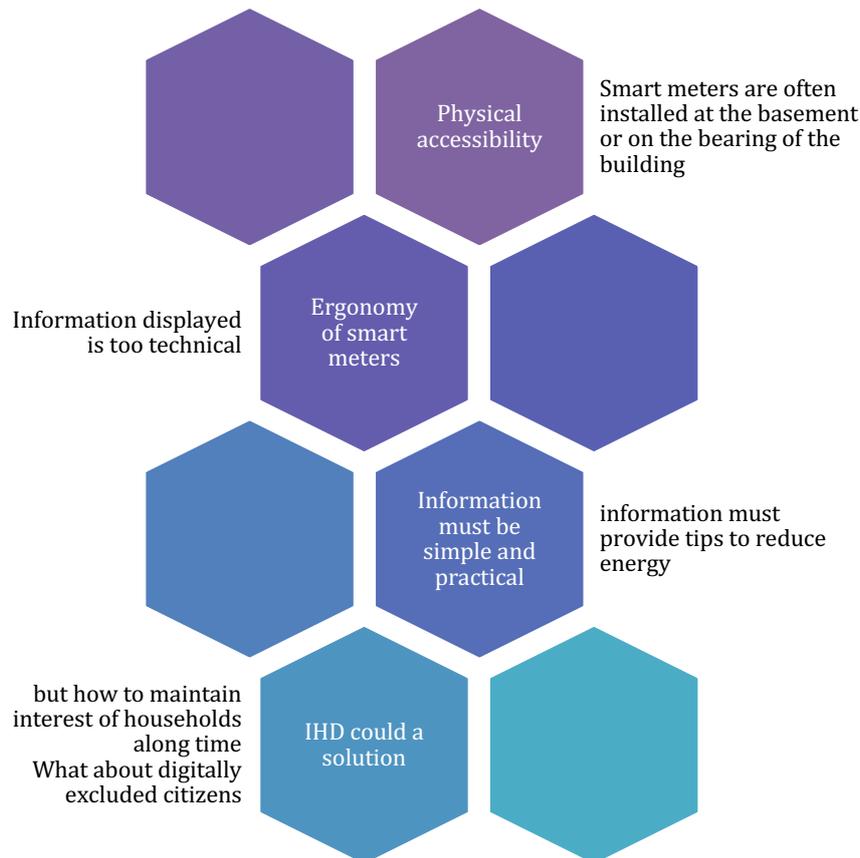


Figure 5 main barriers

Very often, the customer was not able to physically interact with the smart meter because the smart meter was not installed in the flat but in the staircase or at the ground floor and sometime in the closed cupboard. So, the only option was trying to use the internet, which excludes internet illiterate/digitally excluded citizens such as the elderly, consumers with particular disabilities or health conditions, and other vulnerable families. Generally, the digital platforms, created by the DSOs and dedicated to inform on energy usages, display technical information that are not directly useful for the customer.

On that point, we can note the very strong difference between the United Kingdom and other countries involved in SMART-UP project for the use of smart meter. This seems mainly due to usability of the IHD. Indeed, in the United Kingdom after the extended advices to households, it was possible to note a more sustained use of the meter, which was not the case in the other countries.

However, it is also noted that the interest of households in monitoring consumption is fading very quickly over time, so it is necessary to find solutions to maintain interest over time. This could however relate to the fact that once households understand their energy practices, usage and the running costs of appliances (and they have taken steps to address anything they feel needs to be addressed), they may no longer feel the need to check their IHD or app as frequently as they did previously – a finding which resonates with other, existing studies.

The advice provided when the installation of the smart meter was either non-existent or insufficient to allow them households to effectively use their meter to save energy. There is no doubt that more needs to be done to provide accurate consumption data on a regular basis via the smart meter, the IHD or any other mode of communication, accompanied by written comments, graphs, explanations and advice in order to solicit energy saving actions from households. The information has to be less technical and more practical on how households can do to make savings. Efforts have to be done on smart meters' ergonomics.

Web-based feedback displays on the utility website was also not deemed to be widespread and not productive in terms of savings. It argues to try IHDs in order to ascertain whether they can help raise awareness of consumption, to give the household a better and real-time idea of the relative cost of different time and end-uses, to improve energy literacy and energy management, and to alert households of unusual usage patterns based on historical data.

When doing the second questionnaire Ecoserveis found that households interacted quite a bit with the smart meters after the intervention but then they did not use it. We learned that it is important to interact more often with the households and create a connection with them. It is thanks to the human part that they interact more. In addition, Ecoserveis learned that it is key to ask consumers beforehand. Knowledge transfer can be complex, especially when a lot of information is given at once.

During the development of SMART-UP the roll-out of the second generation of smart meters has started in Italy, which foresees a communication channel also with the household in order to install a in home display and read the energy consumption data. These second-generation smart meters could represent a very useful tool for households to better understand their energy consumption and implement behavioural changes to be more efficient. In parallel with the roll-out plan, also an enhanced training programme to households – especially those in energy poverty / vulnerability – should be carried out. From the SMART-UP experience, AISFOR did acknowledge the strong need of training on household energy related issues both in the stakeholders' staff (frontline staff) and in the householders (except for those in deep energy poverty). Another lesson learnt from SMART-UP, especially from the small-scale pilot, is that a one-shot training or enhanced advice is not sufficient to engage consumers on their energy consumption habits as people tend to go back to their old habits and tend to forget information on the long run. The training should be accompanied by a "guiding" programme to remind consumers of the tips and information – the guiding programme could be implemented also through daily communication channels – such as the bill, the website account, social accounts, WhatsApp and short messages, etc. However, it is important that the guiding programme is not considered as invasive by consumers otherwise there is the risk of achieving the opposite result and of further disinteresting consumers on energy.



## 3.2 Recommendations

### What information-based services should be offered to households to encourage them to adopt energy efficient practices in the long term?

**Information-based services on energy consumption have an impact on household practices, although numerous sociotechnical and cultural obstacles prevent any simple, spontaneous adoption of low-energy practices**

It seems clear that providing more precise and frequent information about energy consumption than what appears on traditional bills has impacts on households' behaviours. Indeed, these services catch users' attention about their energy consumption, and encourage adjustments and optimisation of their practices.

**More precise and frequent information help raise awareness of energy consumption's weight in the expenses of the household.** To an extent, it can even make energy savings look more achievable. Provided it comes with **personalised advice** or fun learning experiences, it can also help households learn about what they can do to reduce their bill.

The households who are receptive to this information and in a position to act optimise their practices (for example by turning off and on heaters according to their needs), become more aware about energy wastage (for example, they start covering pots with lids while cooking). Some of them are ready to reassess their comfort needs (by lowering the thermostat or reducing their consumption of hot water, etc.). This last response, consisting in adapting one's level of comfort is, nevertheless, less common and tends to last for a shorter period of time as it requires more effort.

More precise and frequent information could therefore contribute to change behaviours. It cannot however overcome major obstacles to behaviour change such as the difficulty of using and adjusting some technical equipment, a lack of knowledge and know-how of households, and the prevalence of hygiene and comfort social norms.

However, it should be noted that providing more information in and of itself is not enough. Instead, when looking to engage vulnerable consumers, this information needs to be delivered in multiple formats and in ways that have been tailored to their particular needs.

#### **Format and interactivity matter. Enabling on-going learning**

What information should be given to households, and how?

Consumption index alone, even provided on a regular basis, is not enough. Any information-based service should embark households in a satisfying experience, help them learn step-by-step and offer them to experiment new ways of doing things that do not require too much effort for them. Households must be "guided" towards new behaviours. To this end, the three key words to recall are: **situating, motivating, enabling**.

First, services should help household understand and **situate** their consumption compared to others. People want to know things like: "how am I doing on energy consumption? How does this compare to typical consumption per usage?" To this end, it is necessary to rely on **elements of comparison that household will find relevant and fair** (past household consumption, consumption of similar households, typical consumption of the different energy usages, etc.). At least, the size of the household and its characteristics (individual or shared dwelling, type of heating...) must be taken into account for the comparison with other households.



**Motivating** refers to the effort needed to capture households' attention in order to encourage deeper involvement. This should rely on evidence regarding people's way of thinking, acting and making decisions.

- First, to capture households' attention, it is necessary to make the information highly accessible (in a home environment, by sending it via post for those who do not use the internet, etc.) and easily understandable, almost "at a glance".
- Besides, interest and pleasure can arise from making experiments. Therefore, enabling households to discover on their own and at their own pace what they can change (through fun initiatives in particular), on a voluntary and step-by-step basis, is an interesting option.
- Also, encouraging households to save energy with the argument that others are already doing so (in other words eliciting social norms) is a very powerful incentive. Testimonials from those who have managed to reduce their consumption may also be quite useful.

In fact, all these options merit consideration in designing information services. Indeed, the programmes that tend to have the greatest impact are those which combine different strategies (education, skillful use of socio-psychological processes, personal interactions and use of social norms).

One last key aspect to consider in terms of motivation is that consumers, who are also citizens, need their efforts to be put in a wider perspective: "what do my personal efforts and those of my neighbours contribute to collectively and what positive impact does this have on the community?"

**Enabling** means giving households practical advice about what they can really do to reduce their energy consumption. This can be done through personalised advice, with due consideration of each particular situation (type of home and equipment, composition of the household and level of consumption). This advice must be relevant and provided over time, in such a way as not to overload consumers with too much information.

Advice could also ask households what they currently do to save energy at home and give them feedback as to whether these are « positive » energy saving behaviours, (e.g. washing-machine on eco-cycle) or whether they are behaviours that could be harmful to their health and wellbeing (e.g. not turning the heating on at all).

Services to households could also include advice as to how they can make other changes to the condition of their property/heating system that would enable them to reach a level of consumption appropriate to their needs for comfort and wellbeing – could this be switching energy supplier, or accessing financial grants for energy efficiency measures? Signposting households to where this kind of help exists locally/nationally, and who they should speak to in order to access it

Smart objects put in the home can act as reminders (e.g. stickers on the door) or enablers

Delivery of SMART-UP in the UK found that households were more likely to take up energy-efficient behaviours and engage with their smart meter and IHD according to the more types of advice and information formats that they had access to (in this case a combination of enhanced face-to-face advice, the provision of written information resources, and the telephone aftercare service.) This shows that offering advice in different formats and delivering it at different times and in multiple ways can enable households with varying needs and vulnerabilities to find the best way of accessing information to suit them, thus increasing their likelihood of engaging with the project.



(e.g. shower timers): they help new practices to take root and allow for some discussion and negotiation within the household.

**To sum up, information-based services must combine different levers, amongst which: information provision (justifications and instructions), provision of nudges to facilitate the practical adoption of new practices within the home (facilitation measures, prompts), monitoring through feedback and reward systems and, finally, use of socio-psychological processes such as social modelling (or "mimicry"), cognitive dissonance and goal setting.**

As far as the information channel is concerned, there is a wide variety of options (detailed billing in paper or electronic format, dedicated in-home-display, internet portal providing access to more detailed information, SMS alerts, etc.). The offer needs to adapt to the wide range of users needs and expectations, while aiming to deliver a high-quality experience no matter what tool is used. The performance of a particular device will depend on the details of its implementation.



## 4. How to involve frontline staff and improve the implementation of smart-meter roll-out

The first two parts of this report have once again shown, which has been highlighted throughout our project, namely:

- On the one hand, the need to rely on local actors to accompany vulnerable households in the appropriation of smart meters and the implementation of energy savings actions,
- and on the other hand, that a significant effort still needs to be made, at various degrees depending on the country, to lead national and local political actors and the social workers to seize the problem of the fight against energy poverty.

This part of the report deals with the lessons we have learned from the project to engage these actors and provide them with the tools they need to conduct the field actions that have to be taken to strengthen households' energy awareness and allow them to consume more efficiently the energy that is necessary to satisfy their comfort and safety.

### 4.1 Lessons learned from the research

In most countries, the recruitment of social workers has been difficult due to the lack of available time, they are often overstretched and their low appetite to deal with problems related to energy poverty<sup>1</sup>. In fact, they rarely have a solid knowledge on energy efficiency and even less know the functionality of the new meters. Some even consider that energy poverty should not up to them, but up to energy companies.

However, the interviews conducted with management responsible for social organisations show that they are increasingly faced with energy poverty and therefore they must take it into consideration and implement the necessary skills to help the people in such a situation. It is largely to develop their knowledge and energy skills that most organisations have agreed to follow the trainings proposed under the SMART-UP project and to participate in recruitment and Energy efficiency awareness of precarious households.

Interviews conducted with frontline staff highlighted the great difficulty in identifying vulnerable people households in all countries. In France and the United Kingdom, this difficulty has been reinforced by the low level of deployment of communicating meters.

In Italy, it was difficult to engage frontline staff on SMART-UP due to 2 reasons: 1) they were not aware/interested on energy poverty and 2) they were overloaded with work and could not also deliver SMART-UP. These problems were solved mainly by reaching a financial agreement with interested stakeholders in order to enable them to have the economic and personal resources to deliver SMART-UP.

Once engaged on SMART-UP, the experience showed that frontline staff related to energy training and advice:

- 1) In most cases can be considered to be themselves in vulnerable conditions (due to the heavy workload, precarious working contracts, low salaries) and as vulnerable consumers they need enhanced advice on energy themselves,
- 2) Once trained and delivering the enhanced advice to vulnerable/energy poor consumers they increased their knowledge and became keener on their own energy consumption issues,

The SMART-UP experience also showed the need of highly trustworthy relationship between the SMART-UP frontline staff and the consumer as energy is not a topic consumer (especially vulnerable or energy poor ones) are confident to speak about mainly due to the numerous unfair practices in the last decade in Italy. In some cases, the trained frontline staff encountered difficulties in addressing and engaging vulnerable consumers on the SMART-UP pilot.

<sup>1</sup> Numerous other reasons could explain this situation in the different countries. Please read report D6.3 that deals more specifically with these subject



This led in France to target the experimentation on a single district of Nice and in the United Kingdom not being able to recruit target numbers of households.

The social workers and other categories of frontline Staff who followed the training proposed by the SMART-UP project all stressed the importance of emphasizing energy efficiency in order to feel capable of providing good advice and real solutions to households. This type of training should be replicated for a better appropriation of information.

A major challenge for stakeholders in being able to identify and recruit households was linked with the progress of the smart meter roll out in the UK, and the limited number of vulnerable households with smart meters. Although stakeholders continued to take a varied and persistent approach in attempting to identify and recruit customers throughout project delivery, their ability to do so effectively could be put at risk by further delays to the smart meter roll out in the UK, and the provision of SMETS 2 compliant meters that would enable vulnerable households to still switch energy supplier.

Concerning the visit, most of the frontline staff underlines the great difficulty in filling in the section relative to the energy consumption baseline data of the questionnaire as many consumers do not keep copies of the past energy bills keeping only copy of the proof of payment from which it is impossible to calculate the relative energy consumption in terms of kWh). The other problem referred to by the operators was the length of the questionnaire which is too long.

Its place seems disproportionate for most frontline staff and tends to install the person visited in a passive posture (long series of questions and answers) that does not promote initiative or invitation people to speak about the problems experienced. In fact, it tends to standardize the intervention while making the relationship very mechanical. However, some frontline staff appreciate this tool because it remains a good introduction to go around the house and lead the household to talk about its various consumption posts and about their way-of-life.

In Malta, there is no doubt that numerous barriers impede the most deprived to save energy and can limit efforts to raise awareness on energy efficiency. Typical barriers can include:

- not knowing where to find information;
- lack of desire to seek information;
- perceived information overload;
- confusion about conflicting information or partial evidence;
- perceived lack of locally-relevant information;
- format of information not accessible to non-experts;
- source of information not credible or trustworthy, particularly the mass media;
- generational divide in the sources of home heating/cooling among those at risk of fuel poverty;
- information conflicts with values or experience and is therefore ignored;
- risk aversion and confidence in new technologies is also important here;
- an inherent sense of frugality.

Indeed, the complexity and rigidity of the regulations and the existing policies, accompanied by the number of different services available to help consumers constitute a huge and complex web of information which moves quickly and is difficult to navigate especially for the energy poor. Social workers can help bridge this information overload and assist energy poor households to make small changes to their billing and consumption habits without inducing suppressed demand. Consequently, it is clear that specific training initiatives for social workers or installers like SMART-UP are indeed useful and can help make a difference, especially with regards to identifying obvious irregularities in consumption and billing, and with enabling them to propose more appropriate tariffs and encourage good consumption practices across the energy poor in order to minimise consumption. The SMART-UP model shows that social workers are perfectly placed for detecting and assisting energy-impooverished households however, social workers are not familiar with energy consumption and efficiency details but are well equipped to help deprived households with their day-to-day problems and their overall predicament. Focused training can provide the basic knowledge that they need in order to identify and tackle the causes of vulnerability of the households they work with and provide them with better tools to carry out their duties.



It could be also useful to have a semi-structure interview with participants after the second questionnaire. While we have quantitative data, this is not enough to understand why they don't do some things in practice. Qualitative data allows us to say what they are doing and what they are not doing and qualitative information could tell us WHY and how to do change it. Discuss with households and demonstrate to them, using data on their consumption, that they could have reduced their consumption by applying the recommended actions.

While the energy diary tool has been very little used in most countries by households, it has been greatly appreciated by social workers and could be very useful in their future visits. It could also be appropriate for certain households suffering from digital exclusion and who prefer paper-based tools for monitoring their consumption.

#### Energy poverty in Malta: a new topic

Since the topic of energy poverty is a relatively new topic for Malta and not really on the agenda of local governance, PiM spent an inordinate amount of time trying to convince Ministry officials about the relevance of this effort. However, thanks to EU prompting in related fora and the added-value offered by Smart-UP, the Ministry for the Family and Social Affairs and the Ministry of Energy and Water were quick to grasp the opportunity once top-level clearance was obtained.

Training was typically organised over 3-hour sessions in order not to disrupt their day-to-day operations and not overwhelm them with information. The teaching material involved a mix between class notes, power point presentations, and numerous practical examples to run with attendees. Practical examples included how to do quick walk-throughs in vulnerable households, how to interpret the bills, how to use the smart-meter, how to read energy labels on appliances, how to complete the necessary questionnaires, obtaining informed consent paper trail, and typical energy efficiency measures. The training session with LEAP was over 4 days with 3 to 4 hours per session. It is interesting to point out that in most cases, social workers knew very little about energy efficiency and their smart meters themselves.

Data protection is also a major issue especially when dealing with this cohort, and government entities simply cannot be expected to share private data of vulnerable households with 3<sup>rd</sup> parties unless the necessary consent forms are put in place. Consequently, the only legal and practical solution remains to train social workers, who in turn can act as agents of change directly within the households they visit. Similarly, any data collated must be preceded with clear informed consent that is sensitive to illiteracy and potential guardians' approval a priori. Any data collated should only be presented in aggregate with 3<sup>rd</sup> parties in order to ensure no private data is recognisable.

Similar attention is also required towards ensuring deprived households do not absorb the stigma attached to poverty, partially due to its social implications, and which could keep many of these struggling households reluctant to identify themselves as poor and refusing aid.

It is also noted that in most cases social workers struggle to gain the trust of these households who are always suspicious of data gathering or attempts to gain access to private data which are typically construed as an attempt to reduce their benefits. Maintaining the same contact person or social worker can go a long way towards building trust and a mutual dependency with the households. Furthermore, there is a real risk especially in Malta that energy efficiency efforts might actually lead to a suppressed demand, with serious collateral damage to thermal comfort and quality of life. This must be kept in mind all throughout any interventions so as to make sure a good level of thermal comfort and living standard is maintained.

The combination of social workers dealing with the most deprived via the existing and formal FEAD programme, and in their own homes, proved to be an excellent gateway to these households. The training provided helped sensitise social workers to this new reality in energy poverty, and also helped raise awareness amongst policy makers locally. Similarly, the combination of technical staff from EWA looking at the technical merits of the household, in conjunction with the social workers, helped address not just energy use in the households, but also provided hands on training on home audits and energy use to the social worker. This helped increase confidence in providing advice, and augmented the training provided with practical work in the homes.



## 4.2 Recommendations

### Identifying households: a territorial approach

It is possible to rely on the analysis of social needs as a tool for observing situations of precariousness, including energy poverty. To refine its knowledge of the phenomenon of energy poverty and the problems specific to a territory, a set of data can also be collected to quantify and qualify the phenomenon:

- Statistics on incomes and on the housing of inhabitants
- Data from energy suppliers, in particular on unpaid energy
- Data on aid allocated for energy and housing,
- Information on the situation of tenants of social housing.

The quantitative data are to be supplemented by the needs observed by the frontline staff.

### Indicators for observing energy poverty in the Territory

	Quantitative indicators	Qualitative Indicators/Field findings
Low income	<ul style="list-style-type: none"> <li>• % of households below (or on the brink of) the poverty line</li> <li>• Number of beneficiaries of social assistance</li> <li>• Number of overdebt cases</li> <li>• Tenure</li> </ul>	
Energy cost	<ul style="list-style-type: none"> <li>• Number of households benefiting from social tariffs</li> <li>• Number of unpaid energy bills/amount of fuel debt</li> <li>• Number of energy disconnection</li> <li>• Number of households spending more than 10% of their resources on energy expenditure</li> </ul>	<ul style="list-style-type: none"> <li>• Coping behaviours</li> <li>• Difficulties in comparing the offers of energy suppliers</li> <li>• Difficulties in understanding the energy bill and linking with consumer practices</li> <li>• Educational needs on energy consumption</li> </ul>
Poor thermal quality of housing	<ul style="list-style-type: none"> <li>• % of the old housing stock</li> <li>• % of the rental housing with an energy label E, F or G</li> <li>• Type of heating system and fuel</li> <li>• Rural/Urban location</li> </ul>	<ul style="list-style-type: none"> <li>• Presence of energy-inefficient equipment in the housing, auxiliary heating</li> <li>• Poor insulation</li> <li>• Feeling of cold in the housing, humidity, mould</li> </ul>



## The identification of households:

### **What Means Use to identify vulnerable households?**

#### **Identification by social partners**

Raise awareness and inform social workers and partners (meetings, information booklets, sending a newsletter, etc.) on the possibility of directing people to the platform:

- The various social services of the local authorities...
- The Associations
- Social partners
- The municipal councillors and the secretariats of town halls (especially on the rural territories)
- Home help services, including for meal delivery, remote alarm operators, energy suppliers

In order to effectively identify households, more effective mechanisms for identifying and targeting vulnerable consumers who may require additional support with using and understanding their smart meter/IHD are required. Government could consider how possibilities presented by the new Digital Economy Act could enable energy suppliers to share data with trusted local partners (such as local authorities, housing associations) on households with smart meters installed (and the date of meter installation).

Local authorities and housing associations could therefore overlap data on known smart meter installations with information on other vulnerabilities (low income, fuel poverty, age, tenure) to identify which households may require additional and enhanced support. This would allow additional resources needed to be targeted more effectively and efficiently so that they reach those who are truly in need.

#### **Locating Housing Assistance Services**

Facilitate the orientation towards the energy bills Payment support Service:

- The analysis of these applications is an effective means of detecting excessive consumption (which may be due to poor equipment or insufficient insulation) and difficulties in paying the bill energy, sometimes in a recurring way

#### **Sending targeted mail**

Send targeted mails of information to a category of population likely to be in energy poverty:

- Public spotted due to unpaid energy, water and/or rent and charges, in partnership with energy and water suppliers or social landlords who regularly transmit to social services the lists of persons with unpaid bills
- Elderly people particularly vulnerable

#### **Communicating with the general public**

Provide several channels of communication:

- Articles in the press and in the municipal bulletins
- Interventions in the Local Media
- The availability of flyers in places of expectation of the structures frequented by people in situations of energy poverty

#### **Ad hoc outreach operations**

Launch awareness-raising events on energy control and collective workshops with the general public, in particular to identify individuals interested in a diagnosis and individual guidance on these issues, by mobilizing the territory's expert partners for energy interventions.



## **Door-to-door approaches**

In difficult neighbourhoods, it is worthwhile to work in partnership with local associations, NGOs, etc., well known and appreciated by inhabitants, to go to their home and to make them confident.

## **How to mobilize stakeholder groups for the tracking?**

The mobilization of stakeholders needs to take place at an appropriate time, ensure that they have an awareness of energy poverty issues, and continually work to engage them. It is also important to work on the perceptions that people can have on eco-gestures, such as educating social workers to understand how energy poverty relates to their mission and increase their knowledge of indicators to energy vulnerability. This will increase their ability to identify households in need of help and to make appropriate referrals.

A positive outcome is to provide concrete solutions to social workers and build relationships of trust with them following the delivery of training, share the Sharing analysis of the results of the home visit with the social worker who directed the person (with the consent of the person) could encourage continued stakeholder engagement, by reinforcing the positive message and impact of the project to them

In addition, sharing practical tools makes it easier to mobilize partners. The fact that consent forms, questionnaires and the advice itself are completed face to face with the household means that they can engage directly with households, and tailor their approach to their particular needs. This means they are more likely to take up the behaviours being discussed.

## **What media and tools for detection and communication?**

Several useful tools for tracking and monitoring can be developed:

- A communication/flyer information on the device for users and professionals
- A tracking card for professionals
- Awareness and tracking tools for professionals
- A table for monitoring energy consumption (energy diary) to identify situations of over-consumption
- Facilitators of the information meetings of the partners.

## **Convincing decision makers**

Launching a project to combat energy poverty requires the accession and involvement of actors in the field and social workers and implies a strong awareness and political will. For this, it is important to identify the barriers advanced by decision-makers, especially on the financial and organizational aspects, and to find the arguments to convince them (which may depend on the sensitivity of the managers).



The barriers	The arguments to launch the project/conditions of success
The Social organisations do not have the staff capacity, the teams are already well overbooked.	<ul style="list-style-type: none"> <li>• Working at constant means, reorganizing and prioritizing the missions of the team</li> <li>• Opportunity to work on the team organization and the rationalization of the means</li> <li>• Project that promotes and motivates teams</li> <li>• Reorganization of time with less time on curative actions and more time on preventative actions</li> </ul>
The action is too costly, social agencies have limited financial means.	<ul style="list-style-type: none"> <li>• Avoided costs: long-term preventive actions could reduce the amount of curative aids, and thus the budget of aid granted to precarious households in the title of social aid and health expenditure while improving their Living conditions</li> <li>• Start small, with a modest and realistic project and to adjust as you go</li> </ul>
The action targets only a small number of inhabitants.	<ul style="list-style-type: none"> <li>• Goal of reaching more than People and fight against non-Use</li> <li>• To target the accompaniment on those need it most</li> <li>• Conduct general public awareness actions</li> <li>• Quality over quantity of interventions to make a real and lasting difference with households and help prevent additional curative actions in future</li> </ul>
Energy poverty is not a topic for social workers.	<ul style="list-style-type: none"> <li>• Subject that is becoming increasingly important which must be seized before being obliged to do under pressure and in an emergency situation</li> <li>• Project in connection with the ecological commitment of Cities</li> <li>• Impact on social ties in neighbourhoods</li> <li>• Energy poverty is intimately related to the health and wellbeing of a household</li> <li>• Energy poverty as an issue of social equity</li> <li>• Poor housing and social vulnerability are topics of interest for social workers</li> </ul>

In UK, SMART-UP is closely aligned with the objectives of housing association and third sector partner organisations in terms of fuel poverty, energy efficiency, sustainability, and enabling tenants to remain comfortable and debt free in their homes. For some, there is a clear business case in being able to help tenants become more energy efficient (in terms of maintenance of the housing stock). As the first point of call for tenants in relation to changes to their properties, partners also felt that the project would enable them to better anticipate and respond to queries and requests for support. The alignment between stakeholder objectives and those of SMART-UP across multiple avenues suggests that Housing Associations could be well placed to deliver similar interventions in future to social housing tenants. Whilst charity partners may be well placed to engage and deliver interventions to private sector households (rented and owner occupier), there is the potential for other partners who might look to deliver interventions for similar reasons to those of the housing association partners (fuel poverty alleviation, asset maintenance, improving ability to provide support and advice) to be engaged. Involving organisations such as local authorities and Private Landlord Associations could maximise opportunities to reach this target group.



## Training of social workers

First of all, it is necessary to recall that the main competence of social workers is social. Indeed, they generally have few technical skills and for a certain number of them that we hope as low as possible, unwilling to acquire them spontaneously. It is therefore important to give them a technical expertise and a common culture with other professionals acting to fight energy poverty. It is necessary to accompany them by:

- Specific training courses to accompany households in situation of energy poverty
- General training on issues from the energy poverty
- Training/ Information on tracking

### **Focus on training for diagnosis socio-technical**

In order to enable the frontline staff to carry out socio-technical diagnoses at home of households in situation of energy poverty, they should be able:

- To provide key to understanding energy poverty
- To acquire communication techniques adapted to visit a household at home and to provide advice on how to manage its energy consumption
- Learn to assess the socio-economic situation of the household, its lifestyle and daily practices by exchanging with family members
- To know how to identify the main water and energy consumptions in a dwelling by collecting information (energy diary) and using measuring devices for temperature per example,

## How to conduct a diagnosis

Several options for the organization of the diagnosis can be chosen, depending on:

- The objectives pursued by the action,
- The profile and needs of the people to meet,
- The skills of frontline staff
- The budget dedicated to the diagnosis

The slow but increasing appropriation of the notion of energy poverty by social workers in France refers to a feeling of being helpless in the face of energy poverty, of having to accompany social situations without the levers of action.

Unable to act on the root causes (poverty, energy prices, state of housing, obligations of the landlord, ...), they have the impression that their methods of intervention are not sufficient to bring the solutions that households expect.

This feeling of helplessness is reinforced by the lack of technical skills, by the multiplication of their tasks, by the arrival of new non-clientele clients of the social action and by the cumbersome intervention procedures.

Ecoserveis' recommendation is that for future editions, social workers, people that already go to the vulnerable houses are trained in energy efficiency. In that sense, they can help the vulnerable consumers and help them do the things in practice.

In UK, Frontline workers involved in the project were keen to see a continuation of SMART-UP training going into the future, in order to ensure a continuation of advice provision to households. Indeed, stakeholders had found real value in the training they received through SMART-UP and gave examples of how this had benefitted them to delivery services to vulnerable tenants.

At the same time, the variation in the type of smart meters currently available in the UK could complicate the extent to which some advisors could practically apply the knowledge they had gained during their training. This suggests that training courses might benefit from an inclusion of a broader range of smart meter types. Additionally, the energy regulator could consider the implications of an inconsistent roll out in terms of the type of smart meters being provided to customers (and their capabilities) going forward.



However, in Malta, social workers can provide support and assistance if they undertake the following process:

- Train a broad range of relevant frontline staff in energy efficiency, fuel poverty and maximisation of income.
- Identify those living in fuel poverty according to strict metrics;
- Provide relevant and personalized information to individuals and households related to their bill, smart meter and energy use;
- Identify major energy offenders or uncharacteristic bill issues;
- Watch out for discrepancies between this year's averages and last years;
- Help households make sure that they are registered correctly on their ARMS bills, are being charged according to the right rate, and to assist them compile update forms for ARMS;
- Raise awareness of the financial support for fuel payments available
- Provide advice, information, and referrals to other services for fuel poor households;
- Continue investment in social housing improvement works.
- Enforce private rented sector standards
- Ensure the energy efficiency of new builds.

Question	Organization Options
Content of the diagnosis	<ul style="list-style-type: none"> <li>• Global diagnosis: On the social and budgetary situation of the household, on housing and on energy consumption</li> </ul>
	<ul style="list-style-type: none"> <li>• Diagnosis Socio-Technical Focused on housing, issues of energy consumption and equipment</li> </ul>
Location of diagnosis	<ul style="list-style-type: none"> <li>• Diagnosis made during an appointment at the agency's premises</li> <li>• Diagnosis systematically performed during a home visit</li> </ul>
Skills mobilized	<ul style="list-style-type: none"> <li>• Double competence of (s) Expert(s): Social and technical</li> <li>• Double competence of (s) Expert(s): Social and legal</li> <li>• Competence in energy efficiency</li> </ul>



## In conclusion

To facilitate the implementation of such a project, to strengthen its legitimacy and to assist in the recruitment of precarious households, it seems important to get closer to the local authorities, as was the case with the city of Barcelona in Spain, and/or Social housing in the case of Nice (France).

Identifying and engaging with stakeholders who are known and trusted by vulnerable consumers was also crucial to the success of a project. Where this was most successful it included both 'top down' and 'bottom up' support, e.g. support at senior strategic level followed by the commitment and dedication of frontline workers undertaking training and delivering advice.

Focusing activity on a particular community, building or other defined group/area, as in Spain and France, also helped with recruitment; as did incorporating recruitment within wider outreach activities. Door-to-door engagement worked but only when undertaken by representatives from organisations that were already known to the household.

Overall the stakeholders who worked on SMART-UP to deliver the interventions to householders felt that the project had been worthwhile especially in terms of increased knowledge of the energy sector, and increased competency in supporting vulnerable/energy poor customers.

Indeed, we have seen, almost similarly, in the different countries that social workers are often particularly uncomfortable with energy issues. This is all the truer with regard to smart meters. This is easily explained in France and the United Kingdom where the deployment of meters had just begun. The trainings carried out within the framework of the SMART-UP project made it possible to make them more confident on these subjects and more able to offer wise advice and relevant solutions. This responded to their need to be able to actually help households.

In addition to training, it is important to provide social workers with tools to better characterize the situations encountered (check-list of points of vigilance) and to assess possible reasons for overconsumptions observed (energy diary) or on the contrary to situations of excessive restriction likely to cause harmful impacts on inhabitants' health.

Another difficulty we have faced is the collection of energy consumption information. In fact, very often the meters are inaccessible or difficult to reach, households do not keep their bills, often received by email and do not always give access to the actual consumption. Households and social workers are not always able to identify energy consumption. This has been reflected on the one hand by a small number of data collected and a relative low quality of the data collected. The path experienced in France through the collaboration of the DSO seems to have to be privileged. After written authorization from the head of the household, the consumption data were directly collected from the DSO, which allows access to reliable data and limited errors of seizure and copying.

Another notable lesson relates to the visits to household housing. In the first place, it is important to emphasize the need to establish a relationship of confidence with households, hence the importance that stakeholders are well-known, legitimate and recognized by households. secondly, the intervention should be able to be carried out over time and provide several visits, to strengthen the privileged links with the households, to allow the dissemination of information in smaller numbers, in order to facilitate their appropriation and to be able, over time, to help households to take ownership of advice, put them into practice and finally change their behaviour.



Lastly, it seems to us also important for future projects to develop next to quantitative approach, a qualitative approach to allow building on the quantitative data and expanding it to do an in-depth analysis of the behaviour change, improvement of living conditions and energy savings.

For that, more effective mechanisms for monitoring and tracking energy consumption of households are needed for evaluation purposes and to be able to evidence the impact of energy efficiency/smart metering interventions. In addition, more effective measurement tools are required for evidencing the impact of carbon reduction interventions in energy poor households. Governments could consider how possibilities presented by the new Digital Economy Acts could enable data sharing agreements (between suppliers, households and trusted local intermediaries) to historic and on-going consumption data of households in receipt of interventions to enable impact of behaviour change and energy efficiency interventions to be more effectively demonstrated. Funders and commissioners of energy efficiency and smart metering interventions could take into account the fact that energy poor households may take gains from positive energy saving behaviours as increased thermal comfort at home (and therefore increase consumption elsewhere). Outcome measurements of such interventions would need to take improvements to health, wellbeing and reductions in overall energy vulnerability into account. Outcome measurement and reporting requirements would also need to be updated accordingly.

