EmpowerMed

Data recording, collection framework and analysis framework

Deliverable 4.1

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TABLE OF CONTENTS

Introduction

This deliverable is meant to show a clear picture of how the different partners and pilot sites have prepared the data collection tools in the EmpowerMed project by presenting a general framework.

This deliverable is organized as follows: First, the manuscript presents some differences and particularities between pilot sites, to justify the implementation of different actions. Section 2 presents how the tasks in WP3 are covered by several actions and which data collection tools will be used in each case. Third, surveys are meant to be an interesting tool to understand the particularities of Energy Poverty (EP) affected households in the different pilot sites and also a good base to correctly compare results. An overview of the different types of surveys used in EmpowerMed is presented in section 3. Section 4 presents the main Key Performance Indicators (KPI) used by the project and what is the expected impact of each action per pilot site. Finally, section 5 highlights the main goals of the comparative analysis that will be done in task 4.3 and the possibility to replicate some of the actions between pilot sites.

The deliverable concludes that, effectively, the actions aim at different goals (and thus KPIs) depending on the pilot site and the organization that leads them. Some actions are more oriented towards energy savings and to give consumption advice while others pursue the reduction of the expenses caused by energy services enhancing the social organization and mobilization. Moreover, some actions are identified to be more resource intensive (understood as the number of persons involved in each action and the amount of time per person to implement it) than others, i.e household visits demand more resources than collective assemblies. However, it is expected that the results from these higher intensity actions have higher possibilities to end up in effective improvements of the quality of life of target people for some KPI.

1 The diversity of EmpowerMed

The reality of the involved pilot sites in EmpowerMed, as reported previously in the deliverables of work package 1 (WP1), is quite different not only because of the socio-economic and political aspects of each country but also because of the target areas they tackle.

An example of this diversity is visible in the opposite target areas from the pilot sites in Albania, Slovenia and Croatia that focus on a vast region counting with an urban environment plus a number of smaller rural and dispersed settlements, the medium populated pilot site of the city of Padova or the pilots in Marseille and Barcelona that are oriented towards people living in big populated city areas.

The status of the buildings is also different in each pilot site. There are households with heavy structural deficiencies such as lack of insulation, installed heating or cooling systems or even lack of windows and doors altogether, as in the pilot site of Albania or Croatia. This might not be the case of other pilot sites were buildings have better structural insulation (even though windows might be in poor closing conditions). In these cases, pilot actions are concerned on cultural baggage, like for the use of low effective/poor healthy heating systems like petrol burners in Marseille.

Figure 1: Picture of the front of a household in Croatia and Albania and an interior of Italy.

Then, there are cases in which civil mobilization is already in action having a higher tendency towards activism (as in Barcelona), and others were this type of collective movement is less rooted and mobilization is harder to achieve (as in spread neighborhoods of Albania or Slovenia).

The regulatory framework and its applicability is also relevant when deciding which action to use in each location. For instance, in Barcelona, Directive 24/2015 from the Catalan parliament offers good coverage for people identified as being at risk of exclusion. Similarly, in Slovenia, vulnerable consumers are protected with a regulation against disconnection for gas and electricity. In France, there is a regulation on the owners of buildings that should offer adequate house living conditions to tenants (although this is basically useful when the situation is close to security or safety risks).

This leads to another important issue: the legal situation of inhabitants of households affected by EP. While in most cases, the general situation is of ownership or tenant, other non-regulated situations (such as recovered or occupied buildings) are being more and more common in big cities, as in the case of Barcelona. In these situations, people are somehow unprotected by law, having difficulties to contract the basic services of water, gas or electricity and, as a consequence, harder impediments to have access to social energy bonuses amd financial or governmental help.

Additionally, the strategies of each country when translating the EU directives into their own reality also differ from one country to another in terms of methodology, scope and also in scheduling the implementation. This is the case of the deployment of smart meters. According to the benchmark on smart meters in EU[1], most of the countries have a strategy to deploy smart-meters but not all of them, as Croatia has a draft since 2018 that has not yet approved by the government and there is no information on Albania. Additionally, although having a strategy, the times of deployment are different and, right now, only Spain and Italy have a massive deployment, being capable of using smart meter reading strategies, the deployment in France is around 70% although the region of Marseille is not yet finished and in Slovenia has a limited deployment.

[1] Benchmarking smart metering deployment in the EU-28, TRACTEBEL ENGIE, 2019

2 Actions, tasks and tools

For the reasons mentioned in section1, EmpowerMed actions are different according to each situation. These actions are related to the activities in WP3, which are briefly described in the following list:

- Task 3.1 Community approaches: Connect activities for implementation of community (or collective) approaches to empower households, specifically women, affected by energy poverty. Experiences from Spain and France, where community approaches are already taking place, will be transferred and tested in other countries and sites of the consortium.
- Task 3.2 Household visits: these actions will be implemented to empower household members, in particular women, to reduce energy and water use. The profile of energy advisers will be adjusted to the local circumstances but encouraging women.
- Task 3.3 Do-It-Yourself: Set of sub-activities that pretend to empower people to do things on their own, afterwards.
    - Task 3.3.1 DIY Photovoltaic Panels: Workshops (some dedicated to women) on how to install solar panels in order to both incentivize the integration of renewables and to reduce the electricity bill by producing your own energy.
    - Task 3.3.2 DIY Smart Meters: By using the data gathered by the smart meters directly, partners will give feedback to households on how to change their energy behavior to reduce the energy consumption and/or the environmental and economic impact. The tool will generate automatically a friendly and graphical report evaluating the energy consumption registered by the smart meter.
    - Task 3.3.3 Small Low-cost investments: Show participants how to implement small low-cost measures in practice (maintain taps, insulate windows, use ceiling ventilation, plant greenery, shading options...).
- Task 3.4 Support to financial schemes: Activities around small investments potential or implementation. Depending on the needs of the pilot site, activities could be to accompany people to assess deep renovation feasibility, assessing suitability of financial schemes for energy poverty, enabling access to devices such as ceiling ventilators, directing people to available funds, support in accessing available funds for small investments or deep renovation, assessing feasibilities for structural increase of thermal comfort (e.g. refurbishment of condominiums), forming one-stop shops to support home refurbishment approaches or providing integrated home renovation schemes, or establishing financial schemes for small investments targeted to vulnerable groups and, specifically, for women with capacity training.
- Task 3.5 Health Workshops: There will be two type target groups related to health implications and activities.
    - Activities that will help health experts and practitioners detect health gender specific impacts of energy poverty and equip them with simple measures to reduce the impacts of energy poverty or direct people to further assistance programs, hence indirectly helping to tackle energy poverty.
    - Activities that will be held directly with affected people or households through specific workshops or in mutual support groups.

- Task 3.6 Communication of practical actions among households: This task will aim at designing and implementing campaign to reach out households and women in particular. The aim will be to trigger the interest of households for taking part in previously described activities.

Except from task 3.6, all the other tasks in WP3 do expect an improvement of the quality of life of people affected by EP either by reducing the costs of electricity, by improving the comfort, by installing new efficient equipment or by somehow improving health.

However, in order to evaluate the effectiveness of the actions, all of them should consider some kind of element or tool to count or to collect useful data. Table Nº 1 serves to clearly identify the tools used in each action and which actions are implemented in each pilot site.

TABLE N°1: PILOTS, ACTIVITES AND TOOLS

Partner	Partner	Task	Activity	Tool	Survey	Observations
Slovenia	FOCUS	3.1	Community Approaches	Excel-	Basic	Anonymized
		3.2	Household visits	Excel-	Advanced	Personal data
		3.3.3	DIY low-cost measures	Word	Basic	List participants
		3.4	Financial schemes	Word	Basic	List participants
		3.5	Health	Word	Basic	List participants
Zadar	DOOR	3.1	Community Approaches	Word	Basic	Anonymized
		3.2	Household visits	Excel-	Advanced	Personal data
		3.3.1	Workshop Photovoltaic	Word	Basic	List participants
		3.3.3	DIY low-cost measures	Word	Basic	List participants
		3.4	Financial schemes	Word	Basic	List participants
		3.5	Health	Word	Health	List participants
Barcelona	ESF/UAB	3.1	Community Approaches	Excel-	Basic	Anonymized
		3.1	Accompanying	Excel	None	Selected in 3.1
		3.3.3	DIY low-cost measures	Excel	None	Within 3.1
		3.4	Financial schemes	Excel	Medium*	Selected in 3.1
		3.5	Health (Mutual support)	Excel	None	
	IREC	3.3.2	DIY Smart Meters	Python-	Medium	Personal Data
		3.3.3	DIY low-cost measures	Excel	None	From 3.1 & 3.3.3
		3.5	Health (Thermal monitoring)	Sensors	Medium	Personal Data

Pilot	Partner	Task	Activity	Tool	Survey	Observations
Marseille	GERES	3.1	Community	Excel	None	
		3.2	Household visits	Excel-web	Advanced	Personal data
		3.3.2	DIY Smart Meters	Excel	Medium	
		3.3.3	DIY low-cost measures	Excel	Basic	
		3.4	Financial schemes	Excel-web	Advanced	Selected in 3.2
		3.5	Health	Word	None	List participants
Albania	MiA	3.2	Household visits	Excel-web	Advanced	Personal data
		3.3.1	DIY Solar Panel	Word	Basic	List participants
		3.3.3	DIY low-cost measures	Word	Basic	List participants
		3.4	Financial schemes (PV)	Submission	Advanced	Selected cases
Padova	SOGESCA	3.2	Household visits	Excel	Advanced	Personal data
		3.3.2	DIY Smart Meters	Excel-Phone App	Medium	List participants
		3.3.3	DIY low-cost measures	Word	Basic	List participants
		3.4	Financial schemes	Excel-Word	Basic	List participants
		3.5	Health	Word	Basic	List participants

* This activity aims to analyze the financial schemes offered and how close and accessible are to the ones that need it more.

It is important to note that, when possible, the measuring/monitoring tools for actions that are common in more than one pilot site, are the same (or very similar with small adaptations). The clearest case is the tool for task 3.2 household visits, where, simplifying, the same excel file prepared initially for Slovenia is used also in the sites of Albania, Croatia, Marseille and Padova. In the latter case, the tool was integrated with suggestions from OIPE. However, there are cases in which this homogenization is impossible, as for instance for the DIY smart meter in which the reality of each pilot is different (because of the companies involved, the way to access to data, the type of smart meters, its deployment, etc.).

Note also that Health related actions are different in each pilot site although they are included in the same task. For instance, in the pilots doing household visits, there will be an analysis on health during this action, but some will also perform specific workshops both with households or with health practitioners (GERES, DOOR, MiA, SOGESCA). In Croatia, a survey will be done during household visits and then, 3 workshops will be done

presenting the results of these surveys. Moreover, they expect to explore further possibilities of using the health system and medical practitioners to identify and potential illnesses in correlation to EP and to explore further possibilities of cooperation between medical practitioners and social services in prevention and identification EP in the pilot area. Taking another perspective, in Barcelona, health activities have two different approaches: A mutual support group done by ESF and UAB that will take place during 10 to 15 sessions between the biweekly collective assemblies and the monitoring of thermal comfort and air quality executed by IREC from end users that volunteer in task 3.1.

It is possible that some partners finally decide to add activities from other partners to their pilot site (for instance, GERES evaluates the possibility to monitor the temperature of households too, this will be proposed to some households detected during the energy visits).

Note also that there are no actions related to WECF because their contribution is transversal in all pilot sites and actions.

Additionally, table Nº1 also presents the type of survey (if any) that will accompany each action. Note that a description of these surveys is found in section 3.

Finally, it is important to note that, in several cases, there are pre and post-actions within an activity in order to analyze the results of all the actions undertaken and validate the results. These actions are not limited to post-intervention surveys (by phone) like in household visits, they also count on 2nd round of data collection like in the smart meter or thermal monitoring tasks. Most (but not all) of the tasks below will effectively have pre and post analysis:

- Do-It-Yourself actions
- Household visits
- Health group workshops
- Financial schemes (about 40 households in Marseille will receive additional measures although this post assessment will take place by the end 2022 or early 2023)

For more details on the explanations of each tool, please refer to deliverable D4.2, where all of them will be significantly described.

3 Surveys

One of the objectives of the EmpowerMed is to have a picture of the reality of EP affected households in the pilot sites. This is important, basically, for analysis and comparison purposes, as different realities would imply different effects and benefits of the approaches and actions deployed during the project. Therefore, a good way to do this is through the implementation of surveys in some or most of the actions.

For the sake of analysis, the more information gathered the better. However, it is important to land the expectations to the reality of each case, trying not to spend too much time looking for surrounding data and for not disturbing too much the participants. For these reasons, four types of surveys are planned as a guideline for questions to ask.

- Basic survey: This type of survey is meant to be done alone by the target people directly. Its purpose is to have just a first overview of the situation of each individual asking simple aspects that do not need much reflection. For instance, this survey is used in the collective assemblies the first day someone comes and it is filled in during the session in no more than 5 minutes. The questions should avoid aspects regarding living conditions that might cause rejection from the persons completing the survey. Being submitted during the first day, the objective is for people to continue coming. The type of questions in this survey is:
    - Contact details
    - Location of the household (to identify the building/neighbor)
    - Household composition (nº of people living, age…)
    - Legal situation of the contract (ownership, tenant, recovered, others…)
    - Supplies and contracting information
    - Simple comfort questions

- Intermediate or Medium surveys: This type of survey is meant for those activities that will require some more data to provide a proper response, such as the Do-it-yourself actions planned in tasks 3.3. They provide a better image of the specific cases, but still do not enter into accurate details. They should take about 15 to 20 minutes to fill. Apart of the information from the basic survey, this one might incorporate aspects such:
    - Type of house and conservation status
    - Incomes
    - Occupancy of the household
    - Heating/cooling strategies
    - Comfort and health self-perception
    - Questions regarding the type of equipment at home

- Advanced surveys: This survey is the one that presents a complete detailed information of the analyzed household. This survey is typically filled during household visits and audits and several questions are filled by the auditor through visual inspection rather than by the inhabitants. In addition to the medium/intermediate surveys, advanced surveys report details of each room,

number and type of bulbs, appliances and age, reading of bills, etc.

- Health surveys: In most cases, general or self-perception of health questions will be included in the previous surveys. Nonetheless, the project prepared a survey on health issues for those actions that demand more in-depth analysis.

Note also that, when someone has already passed one survey, the next ones will be revised or suppressed (for instance, tasks 3.3.2 DIY smart meters and 3.5 Thermal Monitoring will share the same intermediate survey as it is possible that the same participant household volunteer agrees to do both activities).

It is important to note that, in many occasions, the survey will be filled by retrieving voluntary information given by the affected individual instead of asking questions specifically. This is done for not forcing anyone to say anything that they do not want (or feel uncomfortable) to reveal publicly. For instance, during collective assemblies in Barcelona's pilot site, health issues arise sporadically every now and then. When this occurs, there is someone taking good note of all these interventions. This type of actuation is generally expected in health and gender data acquisition.

4 Key Performance Indicators per action

The project counts on several Key Performance Indicators (KPI) to evaluate the impact of the activities carried out in the implementation of the EmpowerMed project. It is important to emphasize that each action tackles one specific KPI more than others. Thus, each action will have better response to some KPI and worse (or even inexistent) to others. Moreover, it might even occur that the same activity implies bigger or lower values depending on the pilot site where it is implemented.

This section presents an overview of the KPIs that each activity will impact on and its expected effect. A description of the expected impact of each action in relation to each KPI is summarized in a number of Tables for each KPI in this section.

Note that these tables present the expected impact and the reliability of this impact to occur. That is, how probable it is that the expected impact ends up into something real. To exemplify this, let us present the cases of workshops on Do-It-Yourself low cost measure: the tips and suggestions given during these workshop might have a relatively high impact (for instance, change the light bulbs to LEDs or change the habits of consumption to reduce the power peak contracted). However, they depend on people taking good note of this and applying it (which will certainly not occur for all the people assisting in the workshops). In contrast, household visits will actively perform the change of light bulbs. Then, having the same expected impact, the reliability of the second approach is much higher than the first one.

Figure 2: Example of an EP household appearance.

4.1 Energy Savings

It is commonly said that EP affected households tend to have inefficient equipment, appliances and structural building envelope deficiencies that force them to consume more energy than the average. Although this assessment is more than discussible, as literature already indicates that most EP affected households do consume less than average households [1], whenever there is a reduction in the energy consumption there should be a reduction of the energy bills. Nonetheless, people might decide to increase consumption once they have more efficient equipment because they were previously under-consuming. Table 2 summarizes the actions that will somehow impact on energy savings and it presents its expected impact and the reliability of this impact to occur. The KPI on energy savings is measured in kWh/year reduced.

TABLE N°2: Activities and expected impact tackling Energy Savings,

Pilot site	Partner	Task	Activity	Expected impact	Reliability	Post action
Slovenia	FOCUS	3.1	Community Approaches	Low	Low	Yes
		3.2	Household visits	High	High	Yes
		3.4	Financial schemes	High	Medium	No
Croatia	DOOR	3.1	Community Approaches	Low	Low	No
		3.2	Household visits	High	High	Yes
		3.4	Financial schemes	High	Medium	No
Barcelona	IREC	3.3.2	DIY Smart Meters	Low	High	Yes
		3.5	Health (thermal)	Low	High	Yes
	ESF/UAB	3.4	Financial schemes	High	Low	No
Marseille	GERES	3.1	Community Approaches	Low	Low	No
		3.2	Household visits	High	High	Yes
		3.3.2	DIY Smart Meters	Low	Low	No
		3.4	Financial schemes	High	High	Yes
Albania	MiA	3.2	Household visits	High	High	Yes
		3.3.1	DIY Solar Panels	Low	Medium	No
		3.4	Financial schemes	High	Medium	No
Padova	SOGESCA	3.2	Household visits	High	High	Yes
		3.3.2	DIY Smart Meters	Low	Medium	No
		3.4	Financial schemes	High	Medium	No
All	All	3.3.3	DIY Low cost measures	Medium	Low	No

4.2 Emissions' Savings

This KPI presents the equivalent CO_2 emissions of the use of energy at home. Thus, it is strongly related to the previous one on energy savings (4.1) as each kWh consumed has a relation with the CO_2 emitted in the air. Nonetheless, it is not straight forward, as there are some actions that do not directly present energy reductions but, instead, they present high reductions in terms of emissions such as the introduction of renewable power sources. In this sense, this KPI is linked to the KPI in section 4.4 of investment on renewables.
Table 3 summarizes the actions that will somehow impact on emissions' saving and it presents the expected impact and the reliability of this impact to occur. The KPI on emissions' savings measure this reduction in tones of CO_2 equivalent per year.

TABLE N°3: Activities and expected impact tackling Emissions' Savings,

Partner	Partner	Task	Activity	Expected impact	Reliability	Post action
Slovenia	FOCUS	3.1	Community Approaches	Low	Low	Yes
		3.2	Household visits	High	High	Yes
		3.4	Financial schemes	High	Medium	No
Croatia	DOOR	3.1	Community Approaches	Low	Low	No
		3.2	Household visits	High	High	Yes
		3.4	Financial schemes	High	Medium	No
Barcelona	IREC	3.3.2	DIY Smart Meters	Low	High	Yes
		3.5	Health (thermal)	Low	High	Yes
	ESF/UAB	3.1	Community Approaches	Low	Low	No
		3.4	Financial schemes	High	Low	No
Marseille	GERES	3.1	Community Approaches	Low	Low	No
		3.2	Household visits	High	High	No
		3.3.2	DIY Smart Meters	Low	Low	No
		3.4	Financial schemes	High	Low	No
Albania	MiA	3.2	Household visits	High	High	Yes
		3.3.1	DIY Solar Panels	High	Medium	No
		3.4	Financial schemes	High	Medium	No
Padova	SOGESCA	3.2	Household visits	High	High	Yes
		3.3.2	DIY Smart Meters	Low	Medium	No
		3.4	Financial schemes	High	Medium	No
All	All	3.3.3	DIY Low cost measures	Medium	Low	No

4.3 Economic Savings

This might be the KPI that better represents the direct alleviation of EP. The lower the payments people have to do, the lesser the number of cases with arrears, debts or even power cuts. Although it is related with the energy savings, there are many economic incentives or institutional support in each country for those facing trouble to pay. Therefore, slight differences appear in Table 4 in comparison to the previous ones. Note that paying less might not directly mean living better, as a deficient heating, lighting and comfort in general might still remain. Table 4 summarizes the actions that will impact on the economic savings and their reliability. The KPI on economic savings is measured in €/year.

TABLE N°4: Activities and expected impact tackling economic savings,

Partner	Partner	Task	Activity	Expected impact	Reliability	Post action
Slovenia	FOCUS	3.1	Community Approaches	Medium	Low	Yes
		3.2	Household visits	High	High	Yes
		3.4	Financial schemes	High	Medium	No
Croatia	DOOR	3.1	Community Approaches	Medium	Low	No
		3.2	Household visits	High	High	Yes
		3.4	Financial schemes	High	Medium	No
Barcelona	IREC	3.3.2	DIY Smart Meters	High	High	Yes
		3.5	Health (thermal)	Low	High	Yes
	ESF/UAB	3.1	Community Approaches	High	Medium	No
		3.1	C.A. Accompanying	High	High	No
		3.4	Financial schemes	High	Low	No
Marseille	GERES	3.1	Community Approaches	Low	Low	No
		3.2	Household visits	High	High	No
		3.3.2	DIY Smart Meters	High	High	No
		3.4	Financial schemes	High	Low	No
Albania	MiA	3.2	Household visits	High	High	Yes
		3.3.1	DIY Solar Panels	Medium	Medium	No
		3.4	Financial schemes	High	Medium	No
Padova	SOGESCA	3.2	Household visits	High	High	Yes
		3.3.2	DIY Smart Meters	Low	Medium	No
		3.4	Financial schemes	High	Medium	No
All	All	3.3.3	DIY Low cost measures	Medium	Low	No

4.4 Investment in sustainable energy sources

Although the incorporation of sustainable energy sources is yet not widely affordable, it is true that the energy transition towards a sustainable and distributed energy system is becoming a spreading reality. However, for this transition to succeed, it should go by the hand of social justice, meaning that no-one is left behind and everybody is part of it. For this reason and because the project might facilitate the access to funds and installations, this KPI is also considered relevant. Moreover, when finally deployed, sustainable energy sources can empower communities and they also reduce the economic stress of having to purchase the energy consumed to utilities instead.

Table 5 presents the summary of activities having an impact on the investment on sustainable energy sources. It is initially measured in € for the whole project as their implementation is done only once through the project, although it can be also analyzed in terms of energy produced (kWh/year) or the ratio between production and consumption.

TABLE N°5: Activities and expected impact tackling investment on renewable energy sources

Partner	Pilot site	Task	Activity	Expected impact	Reliability	Post action
Slovenia	FOCUS	3.1	Community Approaches	Low	Low	Yes
		3.2	Household visits	Low	Low	Yes
		3.3.3	DIY low cost measures	Low	Low	No
		3.4	Financial schemes	Low	Low	No
Croatia	DOOR	3.3.1	DIY Photovoltaic Panels	High	High	Yes
Albania	MiA	3.3.1	DIY Photovoltaic Panels	High	High	Yes
		3.4	Financial schemes	Medium	Medium	No

In the project, only three partners tackle this goal. Albania is the pilot site taking it more directly, doing specific workshops with PV installers. Similarly, in Croatia there will be one workshop at VET school to show how to create your own solar panels. Then, depending on the financial schemes on renewable energy sources, other partners and pilot sites might incorporate this KPI, but this is not expected according to the current situation of funding in each country.

4.5 People free of debt

Carrying arrears and debts on the energy bills is a common issue for EP affected households that increases the stress of people ending up in this situation. During the actions having direct contact with affected households performed by EmpowerMed, whenever a situation of debt is identified, the participants will receive information on how to claim for condonation or on other possibilities that might appear according to each pilot site. Moreover, all the actions done in the project do go in the direction to avoid an increase of the accumulation of debt or to mitigate its appearance in the first place. One of the objectives of the project is to achieve 50 households free of debt.

TABLE N°6: Activities and expected impact tackling people free of debt

Pilot site	Partner	Task	Activity	Expected impact	Reliability
Slovenia	FOCUS	3.2	Household visits	Medium	Low
Croatia	DOOR	3.2	Household visits	Meidum	Low
Barcelona	ESF/UAB	3.1	Community Approaches	Low	Low
Marseille	GERES	3.2	Household visits	Medium	High
Albania	MiA	3.2	Household visits	Medium	Low
Padova	SOGESCA	3.4	Financial schemes	Low	Low

4.6 Health Support

There is a close relation between EP and health. And not only considering physical health because of a lack of thermal comfort or extreme humidity in the air among others, but also on mental health because of the stress caused by the consequences of falling into arrears and debt with energy utilities.

Not being a medicine-oriented project, this KPI will be mostly based on self-perception of Health. Note that, as described in section 2 and 3, health activities are generally merged in other actions, such as taking notes of health issues that arise during household visits or during the collective assemblies. Then, in some cases, these actions will go by the hand of a specific health survey and the results of these surveys will be used to prepare workshops to different actors (the same household inhabitants, health practitioners or even other social actors). Consequently, this KPI has no unit.

TABLE N°7: Activities and expected impact tackling people free of debt

Partner	Partner	Task	Activity	Expected impact	Reliability
Slovenia	FOCUS	3.5	Health Workshops to health staff	Low	Low
Croatia	DOOR	3.5	Health Workshops to health staff	Low	Low
Barcelona	ESF/UAB	3.5	Health (Mutual Support)	High	High
	IREC	3.5	Health (Thermal monitoring)	High	High
Marseille	GERES	3.5	Health Workshops	Medium	Low
Padova	SOGESCA	3.5	Health Workshops	Medium	Low

4.7 Thermal comfort

EP affected household commonly fail to have comfortable temperature and air quality in their rooms. The difficulties to pay at the end of the month might force to heat or cool only specific spaces of the house and not at all times, which might carry out undesirable side effects such as health problems. In fact, in the pilot site of Barcelona, the municipality already began campaigns in this direction (Figure 3).

Figure 3: Institutional campaign in Barcelona saying "Having cold is not normal. Energy is your right." Source: https://habitatge.barcelona/ca/serveis-ajuts/drets-energetics

For this reason, and because the consumption of energy is done specifically to achieve a certain level of comfort, it was considered important to somehow incorporate this aspect as a Key Performance Indicator. It is true that only the activities related to thermal monitoring will have empirical data, so, in order to compare among pilot sites, it was considered to count on the self-perception of comfort, which is a common practice in the field.

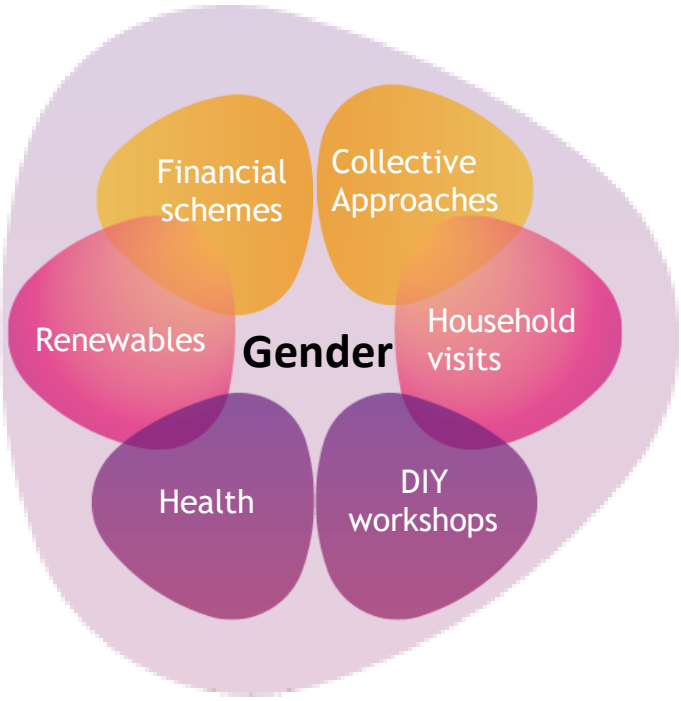
TABLE N°8: Activities and expected impact tackling thermal comfort

Partner	Partner	Task	Activity	Expected impact	Reliability
Slovenia	FOCUS	3.1	Community Approaches	Low	Low
		3.2	Household visits	Low	High
		3.4	Financial schemes	Low	Medium
Croatia	DOOR	3.1	Community Approaches	Low	Low
		3.2	Household visits	Low	High
		3.4	Financial schemes	High	Medium
Barcelona	IREC	3.3.2	DIY Smart Meters	Low	Low
		3.5	Health (thermal)	High	High
	ESF/UAB	3.1	Community Approaches	Low	Low
		3.4	Financial schemes	High	Low
Marseille	GERES	3.1	Community Approaches	Low	Low
		3.2	Household visits	High	High
		3.3.2	DIY Smart Meters	Low	Low
		3.4	Financial schemes	High	Low
Albania	MiA	3.2	Household visits	High	High
Padova	SOGESCA	3.2	Household visits	Medium	Medium
		3.4	Financial schemes	Medium	Medium
All	All	3.3.3	DIY Low cost measures	Low	Low

4.8 Gender

Gender is another of the relevant factors of EmpowerMed and it surrounds all the actions and activities done within the project. For this issue, all the actions will consider a gender perspective thanks to the experience of WECF.

Note that all the tools developed in EmpowerMed for data collection will be gender identified and, in some cases, specific points will be added to enhance the value and empowerment of women, such the identification of who's taking the decisions on energy during the household visits or to note when women take the word and participate actively in collective approaches.



To measure the gender dimension, the KPI on participation of women in the activities, which was preliminary identified in the writing of the project's proposal, seemed good but insufficient. For this reason, additional KPIs will be used in EmpowerMed to evaluate gender. Note that, due to its transversal characteristics, they are presented for the whole project and not by actions or pilot sites.

All the KPI's are shown in Table 9 with the expected goal, which might or not be achieved as some of the are not a direct consequence of the project's activity but more as of a picture of the evolution of the society. This is the case of the development and approval of gender-just policies or legislation in the energy sector, which are not directly related to tasks in WP3 but in WP5, that takes place later in the project's plan.

TABLE N°9: Activities and expected impact tackling thermal comfort

KPI	Description	Goal
Participation of women	Number of female participants in meetings/activities	At least 60%
Empowerment of women	Number of women leading certain activities2	Significant increase (about 30%)
Economic Savings	**Number of women-led households** that have economic savings and its correspondent **amount of savings** due to energy solutions installed by the project	At least 60% of women At least 50% of savings
Investment in renewables	**Number of women-led households** and its correspondent **triggered amount** that invest in energy efficient measures	At least 60% of women At least 50% of investments
Development of gender-just policies/legislation in the energy sector	Enumeration of legal initiatives/draft bills/adopted laws and policies recognizing gender equality issues realized during the project's duration	Increase of about 20%

In particular, table 9 presents two gender KPIs linked to other previous KPIs. These are the economic savings and the investment in renewable energy sources. Moreover, these KPIs have two units to measure them. One follows the same structure of counting the participation of men and women, but the other one relies on the amount of savings or investments triggered by women-led households. This latter unit will help to identify if there is any difference in the amount of savings obtained or in the willingness to invest in renewable energy sources from a gender perspective, which might serve to identify the causes of these differences.

[2] This number needs to be counted at the beginning and the end of the project

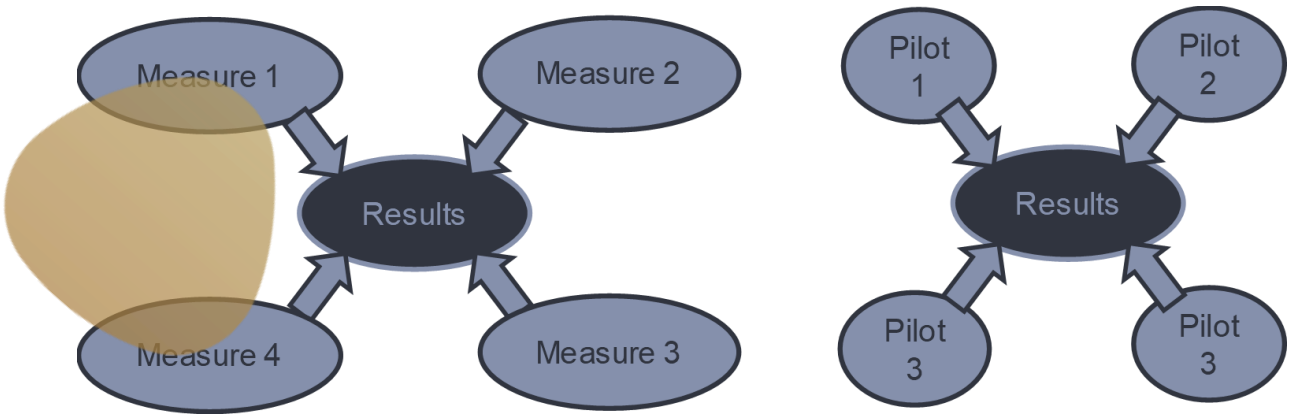
5 Comparison between pilots and replicability of actions

During task 4.2 and through tasks in WP3, all these tools will be collecting data that will be further used in task 4.3. The final goal is to be able to compare the results of each pilot site even though the specific realities are not the same.

For this, an analysis of the possibility to replicate (during the project or afterwards) one or another tool among the pilot sites is meant to be done.

Then, a comparison between the efforts done in each action in relation of the benefits obtained for each KPI will also be analyzed. This will serve to identify which are the most effective solutions to tackle each KPI (whenever the social environment allows this activity to be done).

Finally, a comparison between the same activities among pilot sites will also be done. This will be also useful to evaluate which activity makes more sense in one region, neighborhood or country.



Specifically, even though it was not initially planned, it is proposed that, if possible, the building simulation models introduced for the Barcelona cases, would be adapted to the other areas, to introduce a basic benchmarking analysis. So, from the initial building models (fine-tuned and calibrated through the monitoring data and the surveys' results), and by using existing references from building archetypes to adapt them (Entranze and Tabula Episcope projects), some adapted results would be introduced for the different locations, allowing for a basic benchmarking which would complement other introduced comparisons.

Conclusions

Although EP is an endemic situation in almost all countries, its reality is different in all places. This is also observable in the EmpowerMed project, where the particularities in the pilot sites and of the partners involved in the actions that will take place during the execution phase consider different approaches to mitigate energy poverty.

These differences, described in the previous deliverables and in the above pages, force partners to orientate their actions into one or another strategy tackling different KPIs in each case.

One of the most visible examples is the investment on renewable energy sources, which is led, in this project, by MiA in Albania enhancing the use of solar panels and also by DOOR in Croatia.

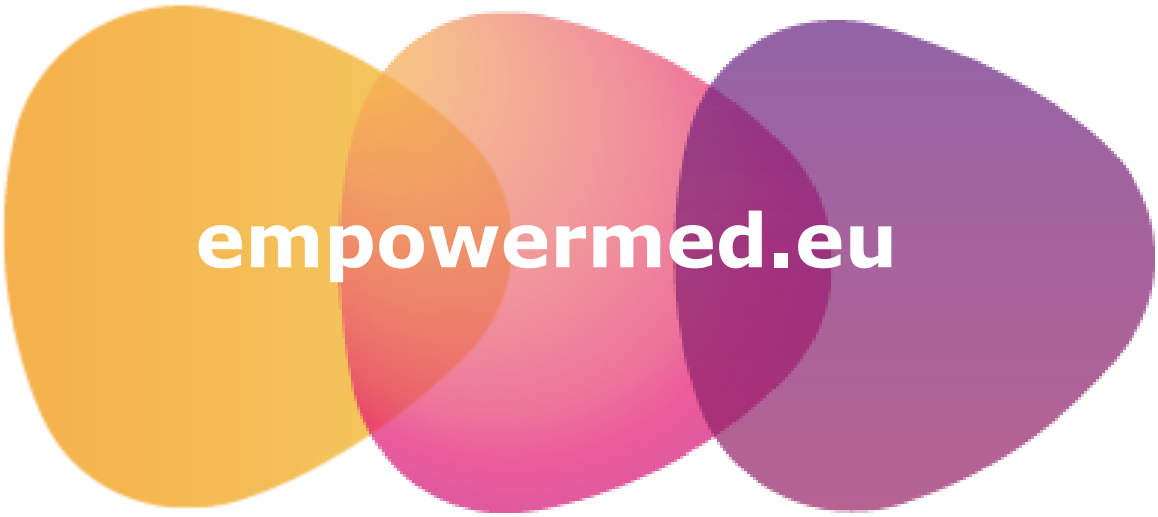
Another good example is the Barcelona pilot site, which does not directly target to reduce energy consumption. Although the state of residential buildings requires retrofitting in many occasions (see D1.6 Barcelona Pilot Site) due to cultural baggage, the actors in this pilot site prioritize to tackle comfort & health gains, debt reduction, economic relief, citizen empowerment and activism over energy savings.

All the particularities presented make the comparison process an enormous challenge but also an incredible opportunity to present and characterize the multiple faces of EP around the Mediterranean.

Additionally, knowing that it is hard, nowadays, to find EP information disaggregated by gender, EmpowerMed considers gender in the base of all the data collection tools. Therefore, when analyzing data in task 4.3, it will be important to show the different effects of EP in this sense.

References

[1] J. P. Gouveia and J. Seixas, "Unraveling electricity consumption profiles in households through clusters: Combining smart meters and door-to-door surveys," *Energy Build*., vol. 116, pp. 666–676, 2016.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