

Exploring Changes in Energy Consumption

 the cocktail analysis®



The project leading to this application has received funding from the European Union's Horizon 2020 research and Innovation Program under grant agreement No 749402





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Methodology

A community of a total of 47 **users** was used in which several approaches were presented related to user behavior with renewable energy, **which lasted one week and consisted of a total of 1 activity per day.**

Objectives that we covered within the community:

Step 1

- **In general terms, we explored what the home is like, along with consumer behavior when it comes to energy, and specifically in the area of renewable energy sources.**
- We identified the types of actions carried out which are related to a sustainable development of energy, and evaluated their behavior regarding this subject.
- Motivations and triggers that have led to consumers changing their procedures and habits in terms of sustainable energy, as well as identifying obstacles and problems that they encountered when incorporating new systems of renewable energy.

Step 2

- **More specifically, we inquired into each one of the energy supplies that form part of the study: solar panels, pellets and heat pumps.**
- Decision-making process, purchase and identifying the motivations of use and triggers, as well as the choice of brand.
- We analyzed the installation process and the overall experience process: problems, solutions, etc.
- Strengths, weakness and the reasons as to why they didn't employ other types of energy and what can help in order to change their minds.

Step 3 *

- **Debate forum:** through the use of the common tool forum, we separated the participants, giving them various fictitious roles:
 - One one side, those who are the most proactive towards changing to sustainable development and;
 - on the other side, those who are more resistant to change.





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Sample

Sample description of the 47 participants for the Online Community:

- 100% of the participants need to be **co-decision-makers when contracting energy for the home.**
- Different **types of consumers:**
 - 75% Immediate target: those who are familiar with energy systems, through database recruitment
 - Solar panels (25%)
 - Pellets (25%)
 - Heat pumps (25%)
 - 25% General population target, which we carried out through open recruitment
- Different **types of homes:**
 - flats (65%)
 - detached home (15%)
 - attached home (10%)
- 50% men and 50% women
- 50% members of the OCU and 50% non-members (based on database)
- Habitual Internet users
- Representation of various essential cycles (not all-encompassing)
- Various population groups: (representation of cities with varying climate types: northern regions with lower temperatures, warmer areas and more humid areas)





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Sample

Total sample breakdown:

The breakdown of the sample for the OCU Online Community was carried out based on the participants' type of home and the type of energy that they use to heat and cool their homes.

Another profile type was also included; one that is further away from these types of sustainable energy sources, so that we can obtain an external and neutral view of this type of consumption.



	Solar Panels	Pellets	Heat Pump	General Population
40 participants in total				
Flat	6	6	6	6
Detached Home	2	2	2	2
Attached Home	2	2	2	2

*While the initial sample consisted of 40 users, 7 additional users were recruited in order to ensure full participation and to cover spaces in the event of participants dropping out. In the end, 47 people participated.





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Timeline of Tasks Performed in the Community

- **Task 1. Overall behavior of expenses and consumption** → Individual Activity (Monday 30)
- **Task 2. Renewable Energy Sources** → Individual Activity (Tuesday 31)
- **Task 3. Decision-making process and installation of Pellet Stove / Heat-Cold Air Pump / Solar Panels*** → Individual Activity* (Wednesday 1)
- **Task 4. Use of Pellet Stove / Heat-Cold Air Pump / Solar Panels*** → Individual Activity (Thursday 2)
- **Task 5. Debate Forum – Role-play: “VARIOUS ROLES AND ATTITUDES TOWARDS RENEWABLE ENERGY”** → Group Activity. (Friday 3/ Saturday 4)

*Various profiles were differentiated by the type of energy installed, therefore 3 different tasks were performed, one for each profile.





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RESULTS FROM THE STUDY:

Behavior on Energy Consumption and Expenditure



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When talking about consumer behavior in terms of energy consumption/expenditure, it's important to mention that everything revolves around the premise of «generating a financial savings». Within this context, two types of measures are clearly contrasted:

On one side there are measures that facilitate a small savings over the short term:

“SHORT-TERM MEASURES”

They offer a small savings, but they don't require users to make a large investment upfront, but rather by taking small day-to-day measures, users can immediately notice a reduction in their energy bill.

These types of measures are the ones that the profiles most distant from renewable energy sources particularly focus on.

On the other side, measures that respond to a greater savings, but projected more over the long term:

“LONG-TERM / PREVENTIVE MEASURES”

These result in an “intelligent” savings with long term prospects. These types of measures allow for visualizing a much higher savings in the future once the initial investment has become cost-effective, allowing users to enjoy a considerable savings in their energy bills.

However, implementing these types of measures requires more extensive knowledge and capability in area of renewable energy sources.





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Short-term actions are described as follows:

Direct, immediate actions made in the home

- Proper wall, door and window insulation
- Hermetically sealed window closures, such as Climalit.
- Using electrical appliances in off-peak hours
- Make the most of electrical appliances: fully load the washing machine and dishwasher, use the oven to make several meals at once, etc.

We've gotten used to this and we try to be quite responsible with consumption for the planet and for my budget.

I'm careful not to run things that consume a lot energy at the same time.

Savings measures

- Contract less power from energy suppliers
- Time-based energy rates
- Sign up for social energy vouchers
- Control devices on radiators

We've contracted time-based energy rates and we use all of our electrical appliances at night.

Controlling expenses

- Monitor and review energy bills on a monthly basis and compare with previous bills
- Tools for controlling and measuring energy savings: Mirubee, Current cost, Tarifazo, etc.
- Installation of an energy meter in the fuse box

I consider it to be absolutely necessary. It's a great way to control and measure your expenses.

Putting in a savings monitor is essential and helps you to constantly control the installation in an easy way.



Currentcost

Tabla de gastos





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Measures that respond to the long-term / preventive label do so primarily for contracting clean and renewable energy sources

- investment

Contracting companies that are 100% sustainable

- New companies that are more committed to nature and the environment. Holaluz, Iberdrola, Somenergía, etc.

We decided to contract a company that allowed us to have lower permanent consumption, while at the same time knowing it was clean energy.

Efficient appliances

- Triple A and low level consumption appliances
Energy-efficient light bulbs
LED-type lighting
Use of low-power appliances (wattage).

Controlling energy consumption starts with the purchase of appliances, so that they're more efficient.

Installing self-sustaining energy producing devices

- The use of clean and sustainable energy sources: heat/cold air pumps, wood-burning stoves, etc.
- Installing equipment that's more autonomous: solar panels, pellet stoves, etc.

I opted for installing a pellet stove equipped with a boiler to round out the installation and have heat throughout the entire house.

I have some thermal panels that allow me to have hot water all year round in a clean and sustainable way - and it's much more economical.

+ investment



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What Perception Do Consumers Have of Renewable Energy Sources?



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What are renewable energy sources?

Broadly speaking, most users have a basic -but accurate- knowledge of what renewable energy sources are. It's a discourse that's built upon what's communicated in the media, through word-of-mouth, and personal or remote experience with these types of renewable energy sources. Nevertheless, in the immediate target we discover a more in-depth discourse:

A more superficial level of understanding: general population

Resources originating from natural, limitless resources: wind, sea, sun, etc.

Respectful of the environment. Natural fuels: olive pits, wood, etc.

They identify renewable energy sources such as: wind, solar (panels), pellet stoves.

A more in-depth level of understanding: The target closer to renewable energy sources also understands...

They have an high upfront cost, but savings can be seen in the long-term.

They're familiar with development within the category: a decade ago the government granted aid and subsidies for their use, but now they're controlled by energy companies.

Energy sources which produce waste, however which is biodegradable in the short-term.

Next we see →



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Perception of renewable energy sources

There are two profiles with different attitudes and understanding towards renewable energy sources:

The most distant profiles:
have a very vague and limited understanding of the category.



They're unable to make the benefits tangible and they focus more on the obstacles for their implementation and use.

The closet profiles: most users already have experience in this category.



They bring together the advantages of savings, although with obstacles that we'll see as we continue.

Next we see →



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The most distant profiles have a superficial understanding of these types of energy resources. Let's see why:

- They have a **slightly general and relatively undeveloped discourse and understanding**. They don't understand in depth the uses and benefits that renewable energies can offer and their perception rests on more generalized information (respect for the environment, it's more expensive, the only people who have it are those with a high level of purchasing power, a tax on the sun, etc.)
- And in the end, the overall conclusion they reach is that it requires a large investment and they don't see the direct relationship it has on savings. They associate it more with their having less of a negative impact on the environment.

What benefits and disadvantages are associated with this type of energy?



The benefit that's associated with it is that of **sustainability**: it's related to cleaner energies that pollute less. The consumer understands this discourse from a very superficial perspective.



However, there's a very consistent obstacle that has to do with:

- **The expectation that it's going to be very expensive to purchase and install.** There's no financial benefit.
- **Little government aid** for users: the government isn't capable, nor is it currently promoting its use and installation
- **Government policies that favor electric companies,** which create a certain level of mistrust among users → they think that it will function like any other electric company.





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Profiles closest to these types of energy sources have a very elaborate discourse, and their understanding was more complete; even before having the experience of using it:

- It's a user who clearly understands the direct relationship that exists between renewable energy sources and financial savings, which is the main driver for acquiring them. On a secondary level they also consider and keep in mind their environmental benefits which help reinforce their decision.

What types of benefits are associated with these types of energy sources?



- **Financial savings:** the maximum benefit revolves around financial savings as a priority; it's the main driver for implementation and use. It's identified as intelligent savings: they have expectations of quickly amortizing the expense that's been invested.



- **Energy savings:** awareness of sustainability. While it's not a priority, they understand that it has to do with a limitless natural resource which:
 - Doesn't imply wear and doesn't generate waste
 - Consists of fuels that have an earlier biodegradable cycle
 - Comprise sustainable energy sources over time



- **Social recognition:** "influencer users". By being innovative and pioneers in the use and understanding of these types of energy sources implies a recognized ecological status.

Bills have skyrocketed and this type of energy is a good way to save money.

They're energy sources that come from natural resources whose exploitation doesn't require searching for them in order to find them.





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Yes, but they do have mental obstacles associated with renewable energy sources in general for different types of energy:

What obstacles are associated with this type of energy?



The initial financial investment is high, although it varies based on the type of energy they want to contract and install. In the case of pellet stoves and heat pumps, the initial investment is less than that of solar panels.



In the case of electrical generating equipment there is the legislative obstacle. Government norms and the tax on the sun results in users not obtaining a financial benefit as large as what they expect, because they have to continue contracting service from the electric company.

- Another obstacle associated with legislation is complication generated by the issue of bureaucracy: **granting permits, requests, etc.**
- Users feel that **the government favors electric companies** more than the individual, resulting in lowering the financial benefits that are obtained almost to a minimum.
- It comprises equipment and energy sources that entails **a difficult process of understanding the information material.**

I would love to completely disconnect from the electrical grid and be self-sufficient, but it's too high of an investment that requires a very long time to amortize.

Unfortunately, I haven't been able to change over to any type of renewable energy because the investment is too high.

It's not about how a heat pump works, which you already know, and for which you don't need a permit; but installing a solar panel is a different story.





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Installation and Use of Renewable Energy Sources



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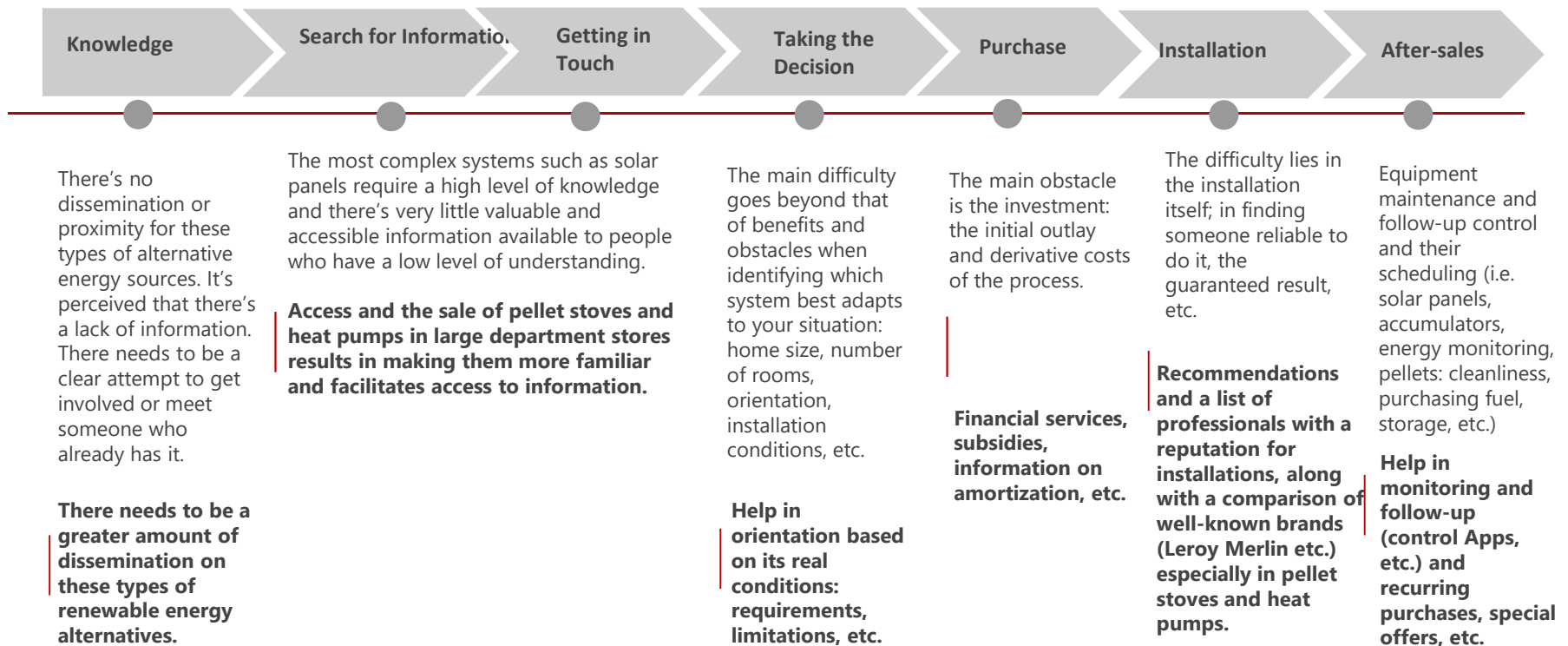




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In general, the implementation process has similar moments for the 3 types of energy sources which form part of the study. They would be:



Let's take a detailed look...



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But...we'll see that, depending on the type of energy we are referring to, some circumstances are experienced differently and with greater emotion.

Let's take a detailed look...



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Pellets



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What's the starting point for a pellet user?

Before we begin to describe what the customer's journey is like to purchase and install a pellet stove, it's essential to understand what triggers the interest among users or this type of energy.

In this context, we encounter 3 change drivers within its energy system:

A considerable increase in bills

- In most cases, the price of the system is higher than that of their previous system, particularly in propane gas, coal gas, natural gas and diesel oil, and where they've been forced to consider new energy proposals which are potentially more economical.
- At the same time they have high expectations in the free market; energy companies' image has deteriorated and users want to experience other options.

The prices of diesel oil and gas have skyrocketed and we can't do anything about it.

Circumstances and specific needs of users

- Most have opted for researching other energy sources due specific circumstances that have to do with space, cold and damp temperatures, greater access to fuel, etc., which have led to evaluating other types of energy sources.

They're the future; we have to care a little bit for the planet.

Weary of energy sources with a low level of sustainability

- An overall greater awareness for the environment. There's a very positive image towards the use of these types of energy sources: modernity, innovation, sustainability, etc.

Storing wood was becoming more and more difficult for us and in the end we chose pellets; the bags are smaller and easier to obtain.



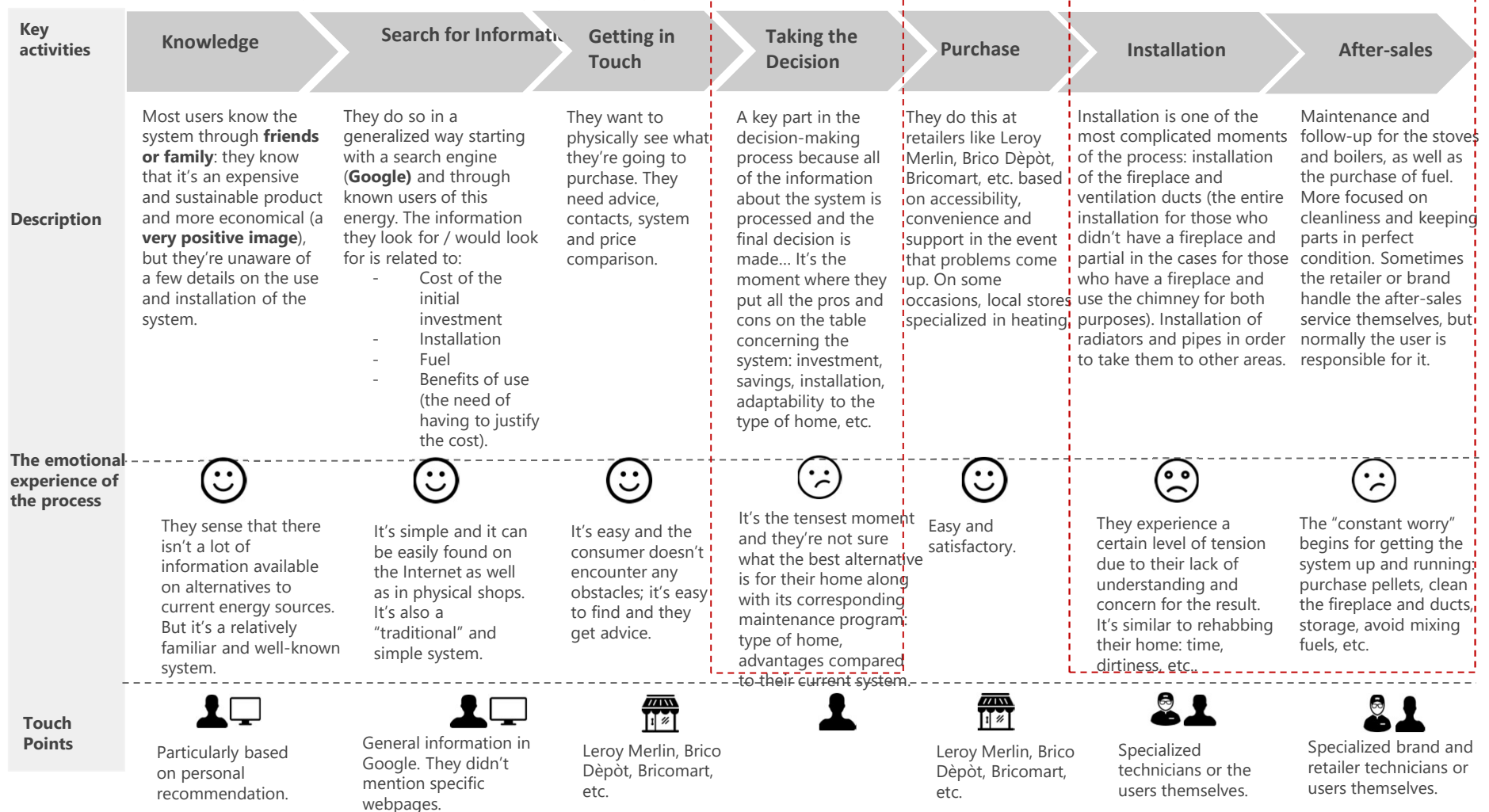


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Pellets

Let's see how they draw the customer journey:



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When it comes to the use and experience of the product, users of these types of energy sources are convinced that there are many benefits and that it's a change for the better.

Advantages

+

Financial savings

They assume that **the investment his high and that at the beginning savings are minimal**. But you amortize over the years and the savings on your energy bills is much less than half of that of the previous system.

Financial savings are particularly noticed in the price of diesel oil; there is a much greater savings with these types of stoves.

It's natural, sustainable energy, and I try to make sure that the fuel comes from environmentally friendly forests.

Heating and cooling

It gives off quite a lot of heat and it's residual.

Those who come from natural gas or coal gas agree that it's a more intense heat, which is always positive.

It's much easier and convenient to use than fireplaces than burn normal wood.

-

Sustainability

Energy sources that **allow for sustainable development** of the system; that care more for the environment and don't generate toxic waste.

The house really heats up; we only have one stove for the lower level and we've installed pipes to take heat to other rooms.





Disadvantages are more visible to users who come from natural/coal gas heating systems, they're willing to accept them.

Disadvantages

+

High price

Stoves are very expensive and installing pipes, chimneys and radiators result in a very high outlay.

Fuel

You have to **become familiar with the various types of fuels that can be used in the stove**: some fuels are not very high in quality and produce a lot of waste; it's not a good idea to mix certain types of fuels in order to avoid breakdowns and additional maintenance.

Storage

They have to **set up a storage area in order to purchase large quantities and realize a purchase savings, but not all users have enough space** at home and therefore can't do it. Some even resort to their neighbors for purchasing and storing pellets. And some have had to make space in their homes in order to store all the fuel required for winter.

Maintenance and supervision

Cleaning and maintaining the stoves and the fuel. Cleaning and removing soot from the stove, eliminating soot, tar and dirt.

-

I usually go shopping with my neighbor so that we can get a savings with the amount we buy; it's the only way to do it so that the bags can fit at home.

When we began using pellets we gained in savings, but lost in convenience and unconcern.

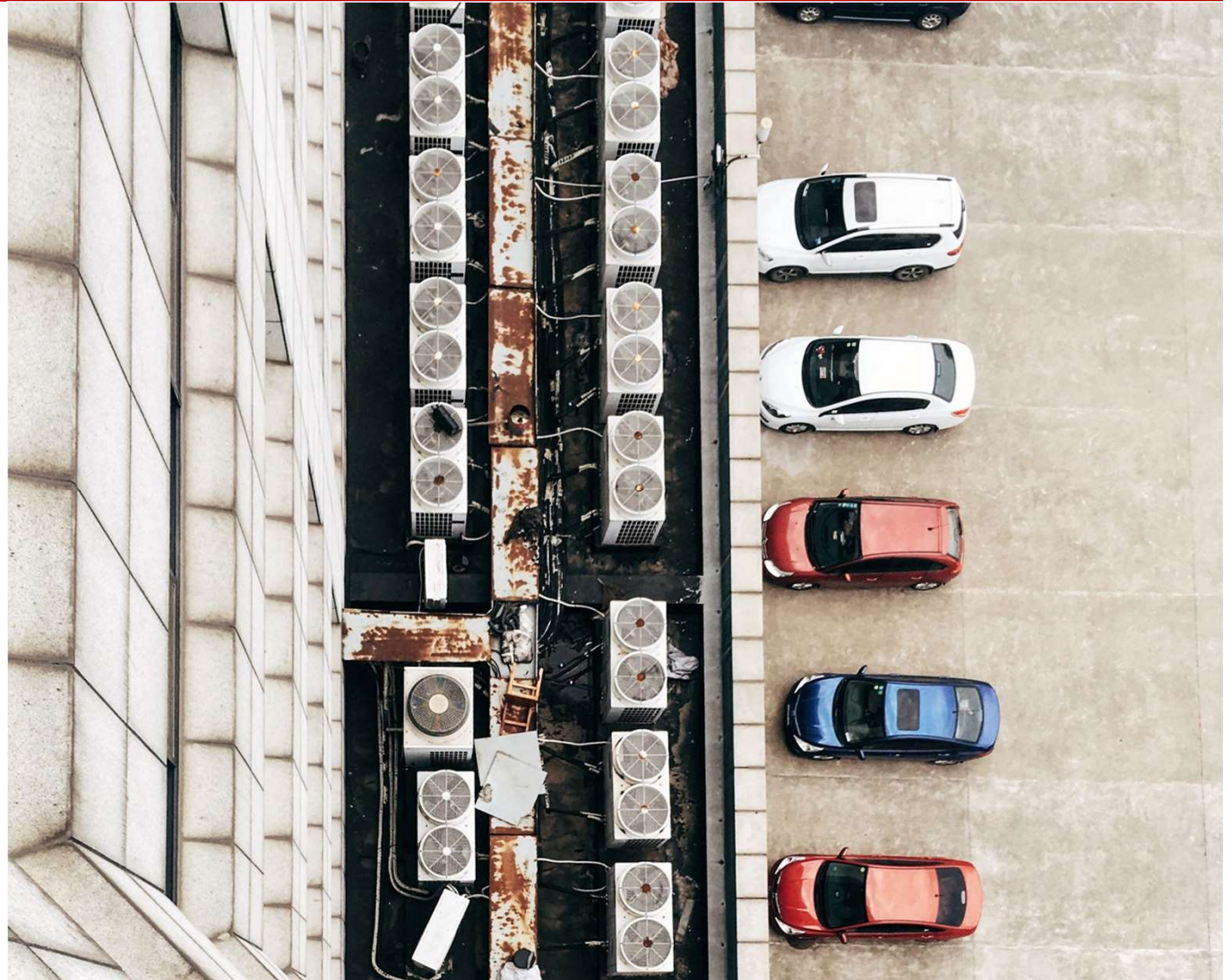




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Heat / Cold Air Pumps



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Drivers for using energy sources such as a heat / cold air pump

These are users who have specific heating and cooling needs due to the geographic location of the home. (warm, humid areas). In this context, we encounter 3 large items that push the user into installing and using these types of energy sources:

Low consumption expectations

They coincide in that their consumption is low. Most need equipment for cooling and sometimes for heating up their homes a bit.

For the amount that I consume, the heat pump is sufficient; if I turn it on for a couple hours it's enough.

Specific climatic similarities

Most users of this type of energy have residences located in warm, humid areas that require more specific climate control conditions. Cooling for the summer and some heating in the winter.

Some users have had air conditioning equipment (cooling) and their experiences weren't very positive: noisy, expensive, high level of consumption, etc.

Winters here are mild and we practically don't use it; what I really need it for is summer.

The search for more economical options

They've considered other options like radiators and/or electric ones, installing gas, etc., but they agree that there's more savings with these types of stoves.

For these milder conditions, they don't need very sophisticated options and they resort to more economical installation and posterior use alternatives and maintenance: they don't expect to have an excessive amount of use.

We live in a mild area and I don't need a very powerful heating system. Heating up the house a bit is enough.





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Heat / Cold Air Pumps

Obstacles and barriers aren't identified in the implementation process in any of the phases.

Key activities	Knowledge	Search for Information	Getting in Touch	Taking the Decision	Purchase	Installation	After-sales
Description	Most users know the system through friends or family : they know that it's a very popular and accessible product. They understand how it works, its use and know for the most part how to install it.	They do so in a generalized way starting with a search engine (Google) and through known users of this energy. The information they look for / would look for is related to the price and efficiency of the equipment, low noise, low consumption, power, inverter, etc.	They want to physically see what they're going to purchase. They need advice on comparing systems and price.	Once they see what the system is like, they check its characteristics of the installation and how it works; the decision is clear. The decision is usually taken at the same time as getting in touch.	They do this at retailers like Leroy Merlin, Brico Dépôt, Bricomart, etc. On some occasions, local stores specialized in heating.	The installation is not very complicated. In most cases it's done by the installer from the shop. They keep in mind optimal areas for installing external equipment: walls near facades or internal patios.	After-sales entails customer service; providing service for breakdowns, repairs and issues concerning guarantees. In terms of maintenance, it's very simple; it's limited to cleaning filters which in general most users haven't demonstrated any major difficulties.
Emotional experience							
Touch Points	 Particularly based on personal recommendation.	 General information in Google and the webpages of Leroy Merlin, Brico Depot, etc.	 Leroy Merlin, Brico Dépôt, Bricomart, etc.		 Leroy Merlin, Brico Dépôt, Bricomart, etc.	 Specialized technician from the shop	 Specialized brand and retailer technicians for breakdowns or users themselves in the case of maintenance.



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In terms of the use and experience of the product, users of this type of energy are convinced that there are many benefits and that changing produces a positive result. The frequency of use in general is higher in the summer:

Advantages

+

Financial savings

This is the result as long as it's compared to the option of installing natural gas and the corresponding expense.

Along with option of including cold and hot in the device, everything is contained in the same service.

Climate control

It fits in with the needs of the users: dry heat for more humid climates. It's a type of non-waste heat, perfect for quick climate control and intermittent use.

Sustainability

They understand that they are cleaner energy sources and additionally when it comes to choosing the equipment they keep energy efficiency in mind (triple A) with inverter technology.

-

I used to use radiators with oil and the truth is I've noticed a lot of savings.

In the area where we live, except on very few occasions, we don't have to use anything other than these types of devices a couple hours per day.

It's much easier and less labor-intensive than fireplaces with normal wood.

It's cleaner energy and they've evolved over the past few years; they're more efficient than the old air conditioning machines.

*No disadvantages or significant obstacles were detected in the use and/or installation with this type of energy source. In general it's a very popular system and detailed information is available to users.





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Photovoltaics



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Before going into depth in photovoltaic energy, it's worth mentioning that consumers confuse this type of energy with that of solar thermal energy.

This confusion may be due to the fact that:

The information and understanding that they have on their system, equipment and energy is not entirely clear.

They're not familiar with the equipment that they've installed and doubts arise when that try to explain whether they're solar panels or not.

They're only aware of the output generated by the system; hot water, temporary electricity, accumulated electricity.

This confusion is greater among users of the thermal energy:

When they speak about "solar panels" they don't know how to differentiate between thermal and photovoltaics.

They equate solar panels to solar cells and believe that since it originates from the sun it's the same energy.

Photovoltaic users have much more in-depth knowledge:

They're users who know the category and are close to professions such as mechanics and technicians, who in most cases were the ones who installed the equipment.

Photovoltaic energy has more presence among its users; there's more connection and use: *"it involves the home's entire electrical supply."*

NOTE: 5 users of thermal energy were recruited due to confusion during the process. They thought they had photovoltaic energy. In order to complete the results of the report we will show what the decision-making and purchasing process was like for thermal energy.





Some general insight on the perception that the users of the Community have about photovoltaic energy.

The great unknown

They don't have a thorough understanding of it, not even those who are interested in contracting it. They assume a certain level of difficulty in the installation and procedures and only a few users can visualize its real benefits.

I have photovoltaic energy, but only for heating water.

I'm an engineer and work a related field, and that's why I know it well, although it's a complicated issue.

Perceived as a more natural and more expensive alternative

The fact that it's a natural energy source makes the user perceive it as something that's most natural and sustainable of energy sources. But they understand that this type of installation and implementation entails a very high price that only a few can afford.

It's a clean energy and very natural. We need to take advantage of all the sun that we have in the country.

The "sun tax"

Most users and non-users are familiar with electric company tax on this type of energy; it complicates the process and makes the energy less profitable and appealing.

There's going to come a time when they're going to tax us for hanging our clothes out in the sun to dry.

The electric companies charge you for consumption and in the end it's not profitable for you, there's a big legal loophole there.





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Photovoltaics

There are 3 key moments in the implementation process: searching for information, decision-making and installation:

Key activities	Knowledge	Search for Information	Getting in Touch	Taking the Decision	Purchase	Installation	After-sales
Description	These are users who are close to the worlds of photovoltaic energy. They have engineering / mechanical knowledge and they've learned by themselves due to their proximity and forming part of circles close to energy (engineers, they work in facilities, mechanics, etc.)	Even though they have a extensive knowledge, they gain information through video-tutorials, specific courses and advice from a well-known expert in the field. They have also had to look online for electric companies and government sites in order to understand the current legislation and laws: how many Kw I need, adapt it to my home, permits and licenses, hiring the company, taxes and other expenses, the duration of accumulators, comparing panels, performance, costs, etc.	This is done at specialized shops and takes place once the consideration to acquire it is high. Sometimes the user is already familiar with it and doesn't need to previously get in touch.	This phase takes on special significance. It's a change that requires quite a lot of thought: it's a large investment with a complicated installation process and unclear rules and procedures. Also, the types of homes that fit into this kind of system are those which are single-family and detached homes, thereby limiting the decision or making it more difficult in the event that you live in another type of home.	You purchase the entire kit at specialized shops: solar panels, batteries and accumulators.	By having recruited the type of users that we have registered, the installation process is done independently. It's a phase that involves certain complications for two reasons: - difficulties with legislation and - the installation process itself which is complicated. A few of them did the installation with the electric company and it was a costly job. The batteries and the accumulators form part of the installation.	Users are responsible for maintenance. If a complication arises, the resort to technical expert.
Emotional experience							
Touch Points	Advanced user	Tutorials, specialized webpages, or in general through Google, OCU, etc. On occasion it's the user's own knowledge etc.	We don't have any data on where they get in touch.		Gesa Endesa, ACS, Solarworld	Advanced user	Professional installer / advanced user



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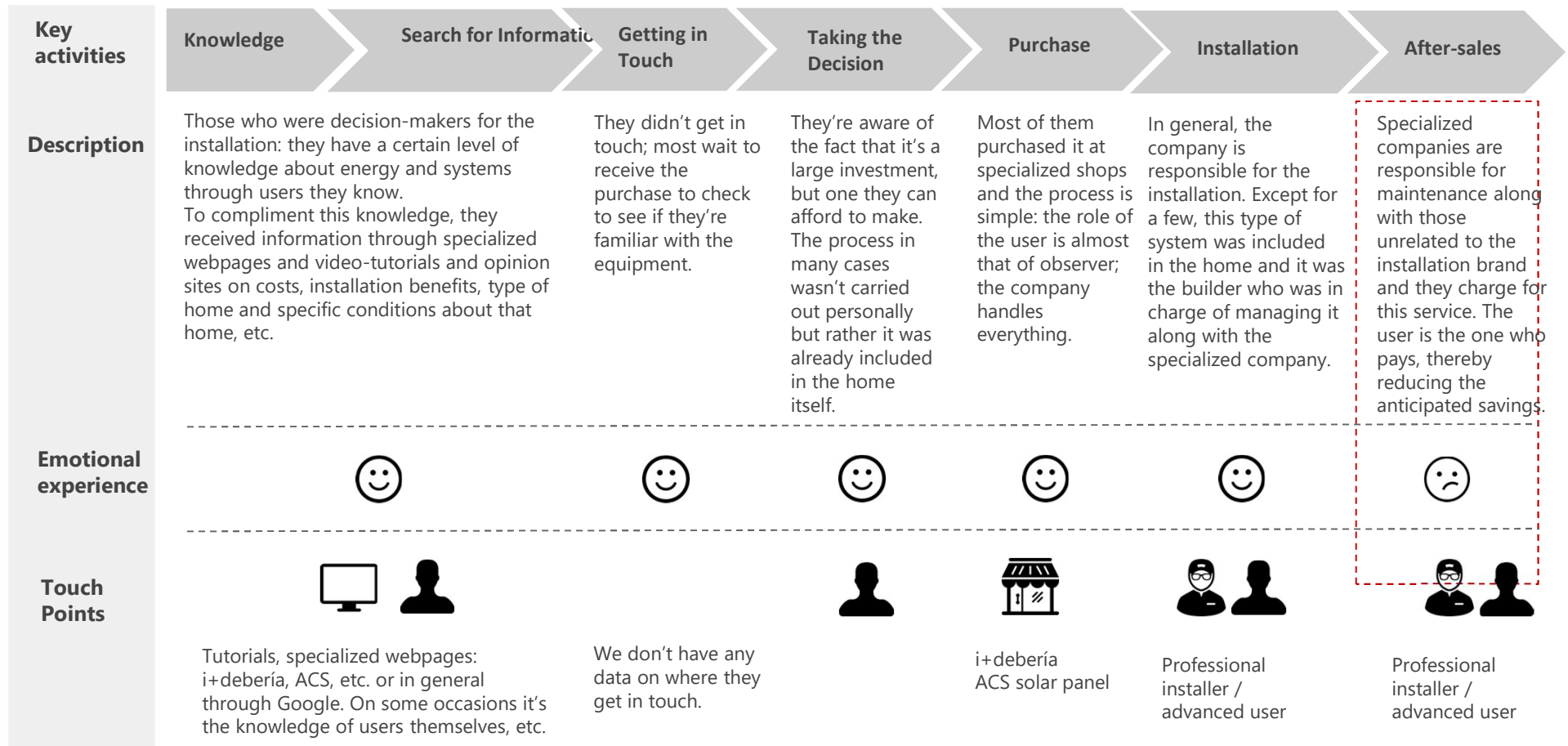
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Thermal

In terms of the process of purchasing thermal panels...

The moment that was provided the most is that of After-sales: on occasions maintenance resulted in an unexpected cost.



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When it comes to the use and experience of the product, users of this type of energy are convinced that there are many benefits and that it's a positive change.

Advantages

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Sustainability

Energies that allow for sustainable development of the system: they care for the environment and they don't produce toxic waste.

Free market self-consumption

The personal benefit that it generates, in other words, the ability to be self-sufficient and have an independent system that generates clean energy provides a large amount of personal satisfaction.

Financial savings

They assume that the investment is large and that savings are small at the beginning.

There is also a component of insecurity that has to do with the possibility that the sun is insufficient and that another energy source that guarantees supply all year round needs to be implemented. However, they trust that with the accumulators, good foresight and efficient consumption, there will be considerable savings in the long term.

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It's clear that it's the most sustainable of all of them because it comes from the sun, and it doesn't produce any waste.

The objective of this is to become self-sufficient some day, and have my own supply.

It doesn't become profitable until after 10 years, but then you save a ton of money.

At the beginning it's a big expense, but in my case since I did the installation I saved a considerable amount.





The disadvantages revolve around the complexity of the installation process and current legislation which slow down and devalue this type of energy.

Disadvantages

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High price

The investment is large and savings happens in the long-term. Moreover, in some cases you need to accompany it with another energy source in order to ensure full supply and this entails more costs.

Bureaucracy associated with installation and consumption

The electric companies don't facilitate installation and hold back the procedure. There's also the perception of a certain reluctance towards the electric company tax: *if in entails natural energy and it's the sun, what do the electric companies have to do with it? The sun is everybody's!*

Maintenance and supervision

Having your own installation complicates supervision and simplifying the process. If proper maintenance isn't carried out it can affect the system.

Elitist component

It appears to be a type of energy that only a few can afford due to the high purchase and installation costs.

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Type of housing

This places a condition on the purchase and the installation. It's easier to do with single-family homes; flats located in buildings make installation more complicated: building community permits, placement of the system, etc. → it's not usually done in this type of home.

I installed a solar panel more out of learning than for looking for a savings, and they're even more expensive and the electricity produced that you send to the grid is not only lost, but you could also be paying for it.

I would have liked to have installed more powerful panels, but they're expensive and then there's the issue of taxes on this type of energy.

The installation process was very easy (I did it myself), but making it legal has been such a terrible ordeal that in the end I wasn't able to finish it because of all the roadblocks put up by the distribution company in my area. (Gesa Endesa). I would have liked to have made the panel legal, but it wasn't possible.

Currently, the laws in Spain are pathetic, a real shame; it's holding back social development for much longer.

The price of it surely means that not a lot of people can afford it; it's just for a few people.





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Conclusions and Recommendations



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Conclusions	Recommendations
<p>Consumers adopt specific measures in regards to energy consumption focused particularly on saving money. These types of measures could vary based on the type of energy that we're referring to:</p> <ul style="list-style-type: none">- On one side there are the measures that implicitly carry an initial high cost, but with the expectation saving money in the long-term.- On the other side, measures applied on a routine basis that don't require much effort and allow for a smaller -yet more immediate- savings.	<p>Provide communication and carry out actions that help and facilitate users with controlling their consumption and expenses:</p> <ul style="list-style-type: none">- Promote the use of energy and consumption monitors through apps, webpages, etc., as well as routine measures that help consumers increase their savings.- Make the long-term financial advantages more visible: figures on savings in specific timeframes, comparisons of savings on short-term measures with those of long-term measures, etc.
<p>Knowledge about renewable energy sources depends on the level of proximity that the user has with the category. Two types of profiles emerge in this context:</p> <ul style="list-style-type: none">- A more distant profile: basic and general knowledge- A closer profile: (category users) with a more in-depth level of training	<p>Provide more visibility and information around the advantages of renewable energy sources and their use. Offer quick guides with relevant information on the benefits, home installment conditions, associated difficulties, prices, profitability, etc.</p> <p>Raise awareness among users: place value on sustainability and the use of natural, limitless resources that accommodate the planet.</p>





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Conclusions	Recommendations
<p>In terms of energy such as Pellets, there's an increased awareness due to the fact that this system has become popular through sales at large shops such as Leroy Merlin, Brico Dépôt etc. This facilitates getting in touch and installing since the shop is responsible for it and the user disconnects from the process. Either way, they agree that maintenance is complicated:</p> <ul style="list-style-type: none">- Understanding and purchasing the right fuel, including quantities and its handling.- Cleaning the chimney and getting it ready for the winter.	<p>For the user:</p> <p>Provide sites where information can help the user, especially in the in the area of after-sales: maintenance and fuel.</p> <ul style="list-style-type: none">- Recommend fuel options that guarantee an efficient use of the stove. The origin of the fuel and the impact it has on the environment.- Provide information on the possibilities of taking heat to other rooms in the house. <p>For non-users:</p> <p>Bring the category closer by visualizing the obtained savings and offering possible financing options for its purchase.</p>
<p>The Heat / cold air pump system is the most prevalent and the most popular. The system has the largest presence in the market and it's sold in large department stores.</p> <p>In general, it doesn't present any type of obstacle when it comes to purchasing it and its use afterwards: they know the type of home and climatic conditions you have to keep in mind for optimal use and saving money.</p> <p>Even so, users don't see this as a type of sustainable energy; they see it as a ordinary electrical system.</p>	<p>Communicate and promote actions for an efficient and optimum use of the system, as well as associating it with renewable energy sources.</p>





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Conclusions

- In the case of **photovoltaic energy** sources, users have very little knowledge. This type of energy is somewhat complicated for users. And the base the knowledge only on the origin of solar energy. In this context, users of thermal energy confuse it with photovoltaic energy.
- Even though they have high expectations when it comes to saving money, they know that it requires a very costly investment and they're not sure if it's going to pay off.
- They also suspect that the installation carries with it many items: panels, accumulators, adapting it to the electric system, etc., and they perceive it as being very complicated.
- The legislative process, the tax put on the sun by electric companies, and permits make things difficult and represent the main obstacle for its use. In the end, some of them install thermal panels which don't entail as much complication and bureaucracy.

Recommendations

For non-users:

Bring the category closer by visualizing the obtained savings and offering possible financing options for its purchase.

Make long-term savings tangible and compare the savings vs. other electrical systems.

Tell people where they can get more information, websites, guides that help to clear things up for users and help them with the legal and bureaucratic side: facilitate the process and its adaptation for electricity (users and non-users).

Make the user aware: place value on sustainability and the use of limitless natural resources that accommodate the planet.





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Thank you



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