

ENERGIA

Design for evolving
scenarios

Utku Ertürkan
Shuqi Lin
Monica Mingiardi
Pablo Miron Hernandez
Alessia Toffanin
Wei Ye

F I · R E A

the warmth of nature

F I · R E A
the warmth of nature

who are we?

our team



Utku Ertürkan
UX designer



Shuqi Lin
service designer



Monica Mingiardi
product designer



Pablo Miron Hernandez
product designer



Alessia Toffanin
communication designer

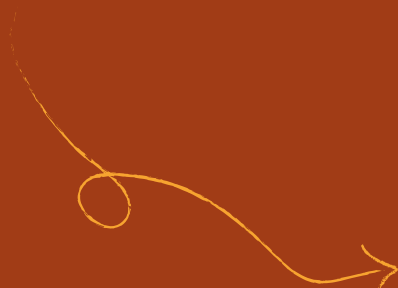


Wei Ye
interior designer

00

background

the energy poverty context



Europe today	8
Italy today	12
Problems	16
Consequences	18

energy poverty context

Europe today

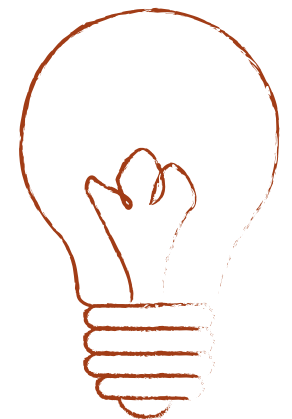
Heating and cooling in Europe

The current energy crisis is a heating crisis. Half of Europe's energy consumption is for heating and cooling, and 42% of this demand is met by natural gas. Buildings are the largest consumers of natural gas, most of which is used for space and water heating. Heating and cooling refers to the energy needed to heat and cool buildings, whether residential or in the tertiary sector (e.g. schools, hospitals, offices). Currently, the entire sector accounts for 50 per cent of the EU's annual energy consumption.

Renewable energies are not widely used in the sector: natural gas is the main source of primary energy for heating and cooling (46%), followed by coal (about 15%), biomass (about 11%), fuel oil (10%), nuclear energy (7%) and some renewable energy sources (wind, photovoltaic and hydroelectric, about 5%). Other renewable sources such as solar (thermal) energy, ambient heat and geothermal energy together account for 1.5% and other fossil fuels for 4%. Overall, renewable energy accounts for 18% of primary energy consumption in the heating and cooling sector and there is considerable potential to increase its share.

"Fossil fuel costs have ***risen dramatically*** over the past year due to economic factors rooted in the pandemic and amplified by the Russian invasion of Ukraine. Increased global demand for fossil fuels, ***lagging supply and global instability*** caused by the war have driven fossil fuel prices to historic levels. Although consumers expect these conditions to have an impact on the cost of gasoline, many have been surprised by the degree to which fossil fuel prices have impacted their ***electricity bills***"

stated by the NYISO



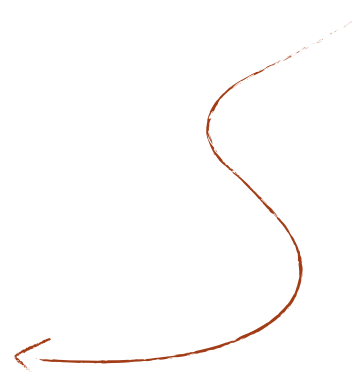


The rise of gas prices in Europe

The price of gas and fuels, responsible for heating most European homes, however, has recently risen exponentially.

How did this situation come about? Prior to Russia's large-scale invasion of Ukraine in February 2022, there was an increase in demand for oil and gas as economies around the world pulled out of the lockdown. Supply did not keep pace with the increase in demand for several reasons, and the rise in gas prices translated into higher electricity prices.

The Russian invasion of Ukraine in 2022 caused oil and gas prices to soar due to fears of supply disruptions. Sanctions on Russia, the potential embargo on Russian oil and gas, and cuts in Russian gas supplies to Europe drove oil and gas prices even higher. The decrease in electricity production in some areas also contributed to the increase in energy prices. Droughts in parts of Europe led to a reduction in hydropower production, and a large number of French nuclear reactors were out of operation at the end of the summer.



energy poverty context

italy today

Consequences in Italy

The consequences of the war between Russia and Ukraine have been felt since the beginning, but the energy crisis it has triggered, especially in Europe, is beginning to have a greater impact now that winter is coming. Before the war in Ukraine triggered a change in approach, Italy imported 95% of the gas it consumed, of which around 45% came from Russia. The amount of gas supplied to Italy from Russia decreased by 26% following the closure of the Nord Stream 1 pipeline, Italy's main energy supplier. "Gazprom announced that it will deliver a gas volume of around 20 million cubic metres, down from daily deliveries of around 27 million cubic metres", Eni said in a statement.

The Italian government is working on contingency plans to save energy and help keep bills low as prices hit a new high. Gas prices in early July were below 100 euros per mw/h. Electricity prices also continued to rise.



The resulting actions

The Ministry for the Ecological Transition signed a decree introducing new limits and times for gas heating in the coming winter to help cope with the energy crisis. According to media reports, Italian citizens will have to lower their central heating by one degree and turn it off for an extra hour a day, according to the new energy-saving plans. The new restrictions for 2022 aim to save around 2.6 billion cubic meters of gas in homes and over 60 million cubic meters in shops. Specifically, compared to the normal regulations on temperatures and times for the various climate zones, they are to:

- Reducing indoor temperatures by 1°C, i.e. 17°C for companies and industries (with a 2°C tolerance) and 19° for all other buildings, including homes (again with a 2°C tolerance).
- Reduce the period for switching on heating systems by 15 days, postponing the start date by 8 days and bringing forward the end date by 7 days (except for sensitive users such as hospitals, retirement homes, etc.)
- Reduce the use of heating in offices and businesses by one hour a day compared to normal.

<i>climate zone</i>	<i>ignition period</i>	<i>permitted hours</i>
A	1 december - 15 march	6 hours per day
B	15 december - 31 march	8 hours per day
C	15 november - 31 march	10 hours per day
D	1 november - 15 april	12 hours per day
E	15 october - 15 april	14 hours per day
F	no limitations	no limitations



to summarise

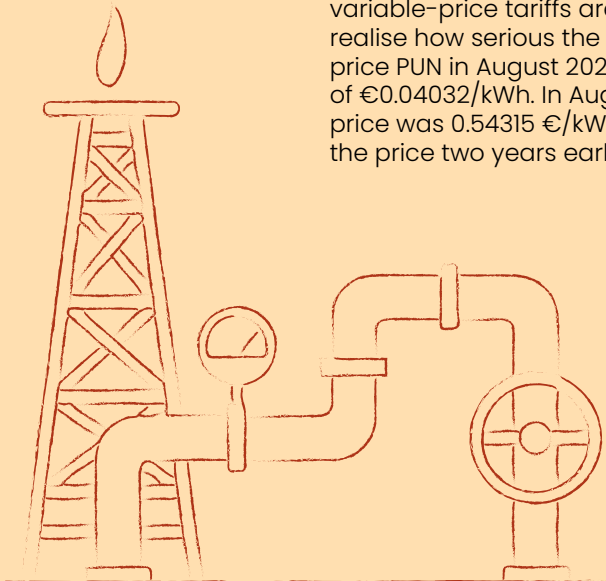
problems

Gas dependency

The analysis by fuel type shows that most Italian homes (17.5 million out of 25.5) use methane, while solid fuels (mainly wood) are used in 3.6 million homes, electric heating and diesel in 1.3 million, and LPG in 1.2 million homes.

Rising gas prices

The wholesale energy markets are experiencing dramatic rises. If we refer to the PUN (Single National Price), the index on which the main variable-price tariffs are based, we immediately realise how serious the situation is. The single-price PUN in August 2020 had an average price of €0.04032/kWh. In August 2022, the average price was 0.54315 €/kWh, or more than 13 times the price two years earlier.

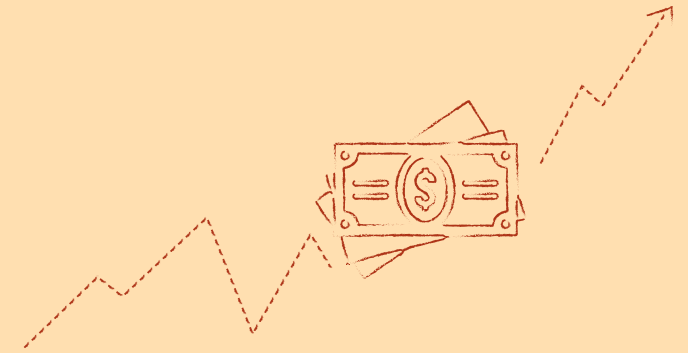


Expensive heating

With the cold season approaching, the spectre of expensive heating is growing. Federconsumatori estimates an increase in expenditure of 61 per cent with gas, 99 per cent with pellets and 49 per cent with diesel. Families at risk of arrears, who may be left without essential services, are worried.

Reduced accessibility of heating

As many as 9 million Italians are already at risk of "energy poverty": one in seven families cannot regularly use their heating system in winter and cooling system in summer due to precarious economic conditions.



which are the *consequences?*



to summarise

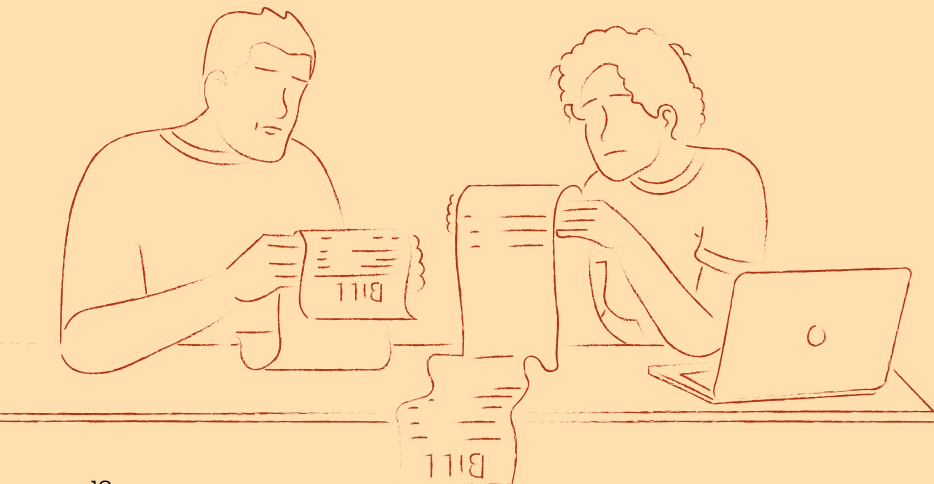
consequences

Expensive bills

According to the analysis, in light of the way the markets are moving, the relative bill in Italy will increase by 62% overall, with an expenditure of 1,479€ in 2022-2023, compared to 912€ in 2021-2022.

Difficulties in paying bills

According to a survey by Arte, published by Il Sole 24 Ore, nearly one in six customers struggled to honor their supply contract in February, with an average increase in arrears of more than 36 percent over the same period last year.

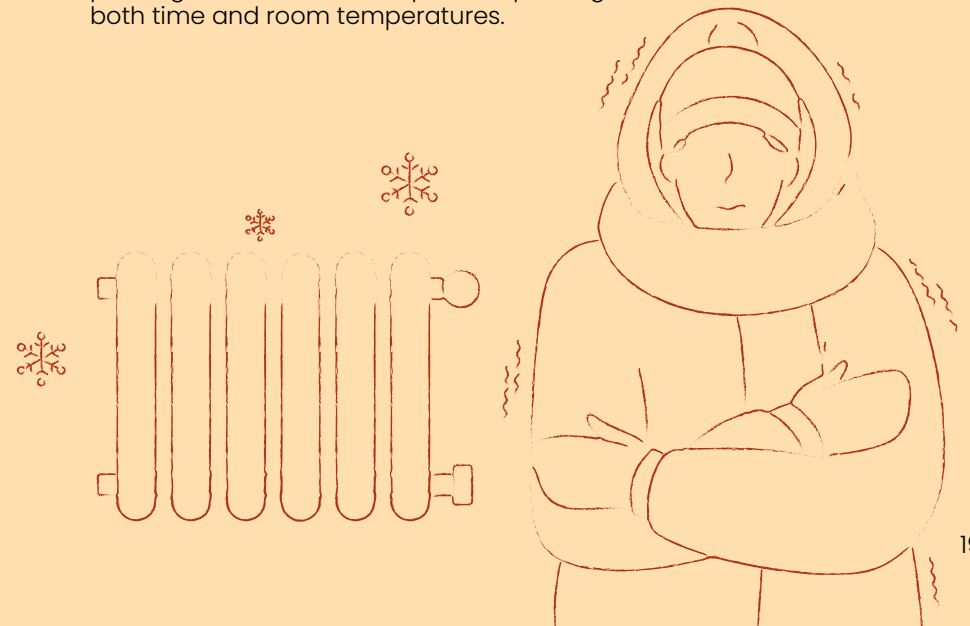


People left in the cold

When it comes to domestic utilities, however, there is always the weapon of disconnection of the supply. And it is precisely this that Italians will have to fear most: those who cannot pay for electricity or gas will be left in the dark and without heating. There is no rule in the field of electricity and gas like the one for the water supply, that today entitles poor and morose families to 50 litres of water free a day.

Consumption reduction

State measures try to help the population by pushing to reduce consumption, impacting both time and room temperatures.



01

scenario

the future that lies ahead



Opportunity area	23
Our prediction	24
The scenario	26
Our method	28



exploiting nature's resources

opportunity area

Fossil fuels (coal, oil, and natural gas) currently account for 80 percent of global energy consumption, compared with about 20 percent for renewables. They are the ones that require the least investment, but they are also the ones that are experiencing the greatest price spike. Currently, renewables provide nearly one-fifth of the world's total electricity: but, by 2040, this share is expected to reach 40 percent, replacing coal. Renewable energy sources are becoming the trend of the future in the energy sector. They are no longer seen as a niche but are gaining more and more space. Customers are increasingly aware of the environmental impact, their own and that of the companies they choose. Economically there are also many advantages, especially given the current situation.

We have seen that gas is still predominant in the home heating sector and is the protagonist of a crisis. However, having a warm home is essential for personal well-being and physical and mental health. Currently, responses to this phenomenon are pushing toward reducing consumption, worrying about how households can reduce expenses. Sustainable and careful consumption is always a good practice, both for one's pocket and for the planet. However, what is needed now is not just reduced consumption, but improved heating affordability for struggling households.

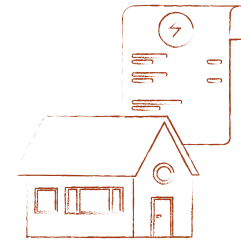
To that end, if traditional heating systems are becoming so unaffordable, it might be useful to take a step back, abandon technologies and return to simpler elements. Natural elements such as fire, wool, and the thermal capabilities of some natural materials can be harnessed to our advantage, offering a simpler form of heating accessible to families in need. New technologies are not always the best way to go; perhaps taking a step back, using simpler elements, and taking advantage of what nature can offer us is what we need to solve this problem.

In an era of energy crisis,
how can we make heating
more affordable?

Can nature help us?

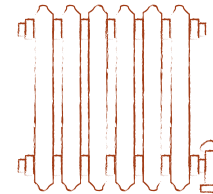
our prediction

how would Italy look like in 2028?



Affordability

The price increase never really stopped, it slowed down slightly, but gradually continued to rise, making it more and more difficult to afford home heating. Bill prices have risen exponentially, leaving homes in great difficulty. The percentage of income spent on heating has a much greater impact on households, leaving many struggling through the winter.



People

People are more aware of their energy consumption. They are well aware of the consumption of their household appliances, and try to save as much as possible, both for the planet and for their own pockets. They try to limit consumption to the bare minimum, reducing (or abolishing) the use of classic heating systems or looking for new solutions that do not require the use of gas or electricity.



Sustainability

Attention to the environment has grown. People's awareness of their consumption and the raw materials they use has increased. There's a greater focus on the origin of raw materials and products used, 0 km products are preferred, and renewable energy is preferred too. The latter are developing more and more, but they are not increasing as much as expected, and before they completely replace fossil fuels it will take another decade or so.

the scenario

humans and nature

New habits in the home

People seek alternative methods, scaling up with what they have at home and taking advantage of the most convenient and accessible resources. There is a shift towards products with little labour, natural and from local producers, which are easier and more accessible to obtain. Nature thus becomes an inclusive and accessible source.

Nature as inclusive energy

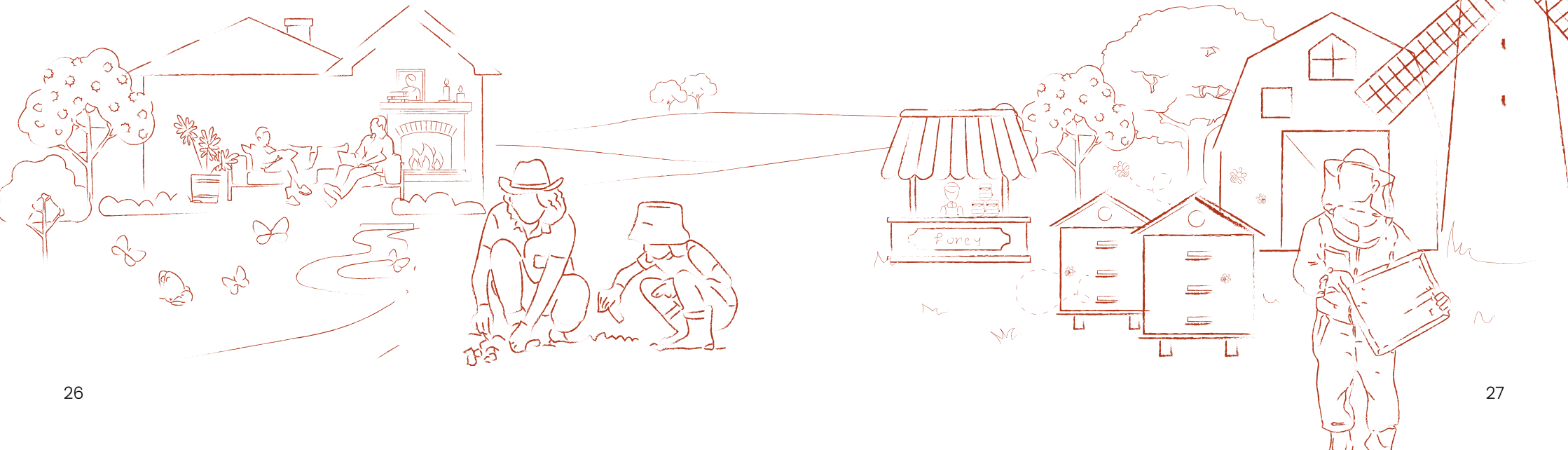
At a time when the accessibility of heating has decreased due to rising raw material prices, the focus shifts to alternative raw materials. These are opening up an inclusive type of energy that everyone can afford without depending on a large supplier. Small local producers help people with their products, and at the same time receive more support through this exchange.

The approach to sustainability

People are looking for alternatives, and after decades of home delivery and international shipping, they are moving towards local and sustainable production. They are careful about the raw materials they consume and aim to support small producers, thus helping them to protect eco-sustainability.

Who does it concern?

All people will be affected equally. Those who will suffer the most will be people on low incomes who are looking for alternative ways to keep warm while at the same time being alert and aware of the changes in their community.



our method

how we achieve it with Firea

In partnership with local producers, we promote the use of natural raw materials and support biodiversity and the planet. Beeswax becomes a new source of cheap and sustainable energy, enabling people to have a simpler, more sustainable, and inclusive source of heating.

In summary, Firea offers:

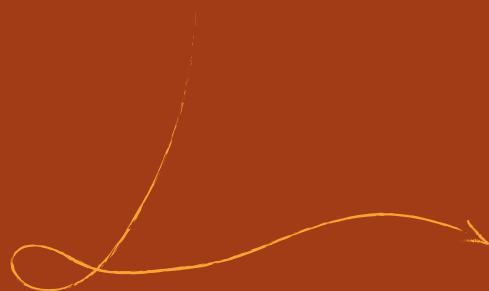
- **A hive adoption system**, to support local wax production and promote biodiversity and bee protection
- **Home deliveries of wax and wicks** useful for lighting candles
- **A candle stove** designed to be used with the wax that is received
- **A system to raise awareness** about beeswax production and the protection of these extremely important insects



02

service & system

our offering and experience



Introduction	32
Stakeholder map	34
Service system map	36
Stakeholder analysis	38
Why beeswax	40
Subscription map	42
Offer to beekeepers	44
Farm visits	46
Farm visits blueprint	48
Business model canvas	52
Persona: Laura	54
Persona: Enrico	60

our service

introduction



Aim

Our goal is to protect global biodiversity, and to do this we support small local farms, demonstrating that nature already provides us with all the answers to the various problems we face on a daily basis. With the candle stove and our locally produced wax delivery service, we aim to provide different types of households with a new home heating system, revolutionizing the one currently in use. We show that a more inclusive and sustainable system that uses natural and renewable materials in a responsible and nature-friendly way is possible.



Target

At a difficult time when the majority of the world's population suffers from energy poverty, our target audience is all those who are looking for innovative, economical, and sustainable heating methods, and who hope to heat their homes without creating new burdens on nature.



Offering

- **Adopting hives:** Through the Firea website, users can choose the hive they want to adopt, through this subscription they can receive whenever they want wax or wax and honey extracted from their hive directly to their home (maximum 1kg of wax and 500g of honey per month).
- **Newsletter:** Firea provides monthly information to users on various topics related to nature, biodiversity, climate change, and more.
- **Farm experience:** Firea invites users to visit their hives on the farms and attend guided tours organized by the farms with experts who will explain the various production processes.
- **Full-chain online and offline purchasing channels:** users can buy a unique product for home heating on the brand's website or affiliated offline stores.

our service

stakeholder map

Firea manufactures the product and its service system. It works closely with stakeholders to propose a new form of heating in the home environment alleviating the expense of electricity and protecting global biodiversity.

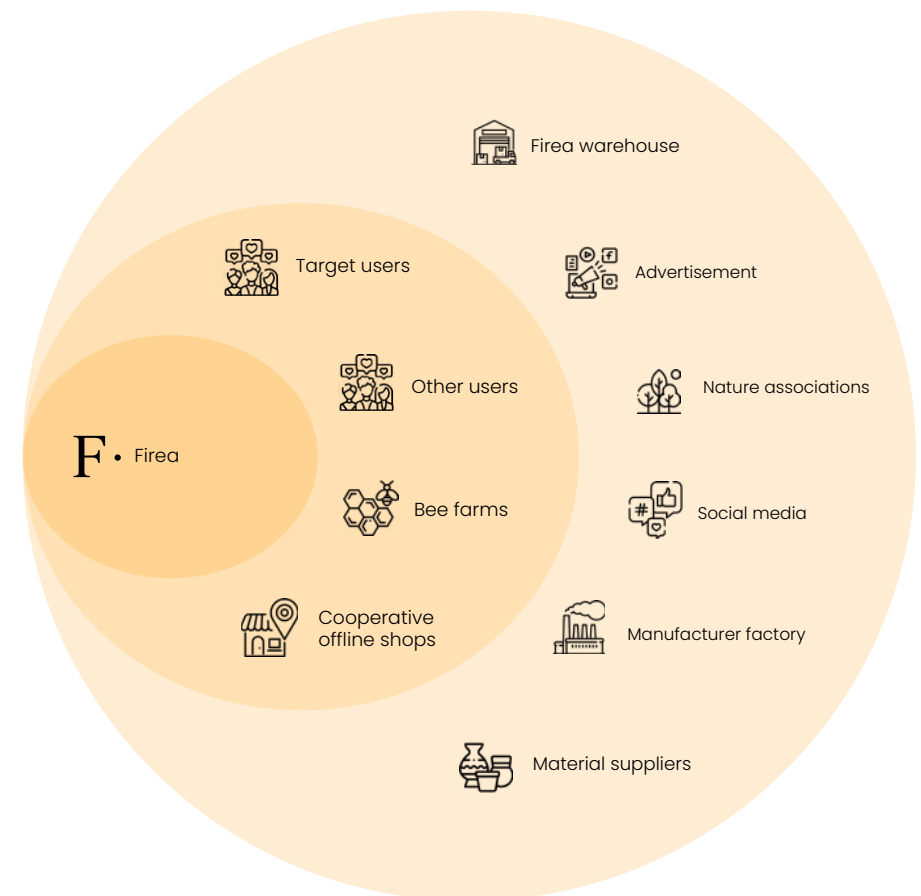
Roles:

- Firea works with local farms to provide users with adoptable beehives and guided farm tours
- Firea provides visibility to small, local beekeepers, giving them the opportunity to receive financial support for their business while helping to protect bees.
- Firea collaborates with nature organisations to provide monthly newsletters on different topics to improve users' knowledge.
- Firea collaborates with stakeholders such as terracotta and textile suppliers to make products.
- Firea has an online website and collaborates with affiliated offline shops to sell and promote the brand and its services through multiple channels.

Incentives:

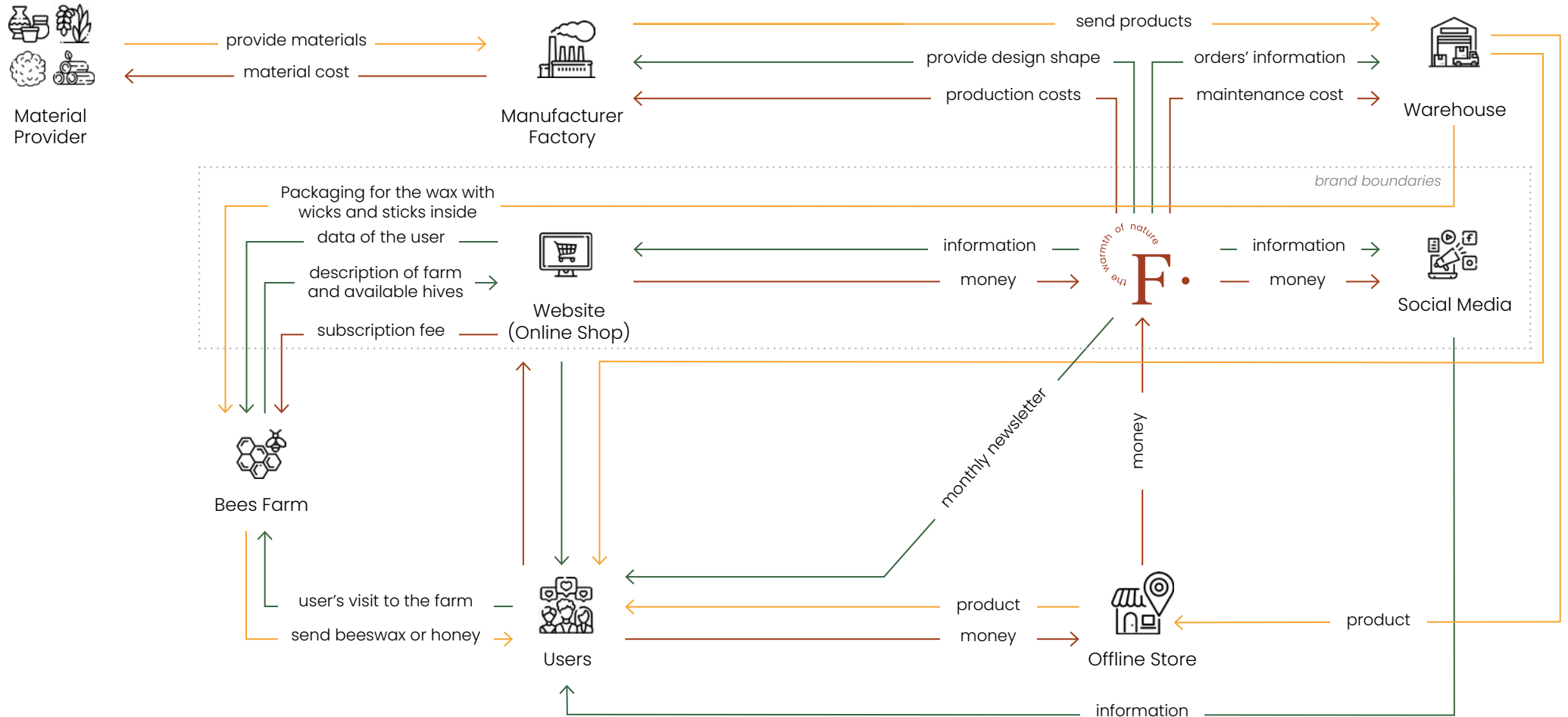
- Monetary incentive
- Contribute to a more sustainable environment
- Contributing to the protection of biodiversity

For Firea, nature is indispensable, which is why it is important to have stakeholders who share the same values



our service

service system map



our service

stakeholder analysis



Users

Everyone looking for innovative, economical and sustainable heating methods.

Roles:

- Users adopt hives through the Firea website.
- Users receive a monthly newsletter.
- Users can visit the farm for a physical experience.
- Users can buy products on the Firea website or in affiliated offline shops.

Incentives:

- Experience the new heating system
- Contribute to a nature-friendly impact
- Achieve sustainable and inclusive heating habits
- Connect and enjoy the beauty of nature



Local bees farms

Small local farms offer users new opportunities and experiences to get in touch with nature and provide different raw materials such as wax and honey.

Roles:

- Bee farms provide adoptable hives.
- Bee farms provide users with honey and beeswax from adopted hives.
- Beekeeping companies guide and organize farm experience activities.

Incentives:

- Monetary incentive
- Contribute to a more sustainable nature and biodiversity



Other stakeholders

These could include: offline affiliated partnership shops, magazines, media, material suppliers, manufacturers, factories, natural organizations, etc.

Roles:

- These entities provide users with multiple channels to purchase associated products.
- They provide channels for service sponsorship.
- They provide raw materials for the production of products.

Incentives:

- Monetary incentive
- Contribute to the search for more sustainable and efficient heating methods
- Contribute to the knowledge of our users

an insight

why are we working with beeswax?

Beeswax is a natural substance generated and secreted by honey bees, which use it to develop their honeycombs. Beeswax is composed largely of fatty acids, hydrocarbons and esters. Wax is hard and breakable when cold, but soft and malleable when heated or exposed to human body temperature. Because beeswax does not deteriorate, go rancid or expire, it can continue to be heated and reused.

Properties

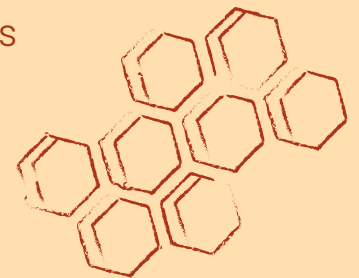
- Beeswax is a 100% all-natural wax and made during the honey making process.
- Beeswax has a relatively low melting point of around 63 C. This means it is easy to transform from solid to liquid and vice versa.
- Beeswax has a clean, smokeless burn which, of course, is a key reason why it is used in candles. In fact, beeswax candles don't just avoid polluting the air. Beeswax releases negative ions when burned, helping attract airborne pollutants such as dust and dirt which carry a positive charge.

How it is produced

- Female worker bees convert honey into beeswax. The bees huddle together, raising the temperature inside the hive to at least 33 degrees Celsius, which enables the wax glands in their abdomens to convert the sugar in the honey into beeswax, which oozes through tiny holes to form scales on their abdomens. They or other hive workers chew on these tiny scales, turning them into beeswax of the right consistency to build the hive. Wax scales are about 3 mm wide and 0.1 mm thick. About 1100 scales are required to produce 1 gram of wax.
- To extract the beekeeper must remove the wax covers attached to the hive frames. While most of the honey will remain in the frame, some of it will come off with the wax cover. Beekeepers must place caps into barrels to separate excess honey from wax. Once the wax has drained, it is ready to be melted and used.



Wax is a fundamental tool for us: not only is it an integral part of the product and guarantees its operation, but it represents a new, more ***inclusive and sustainable*** type of energy.



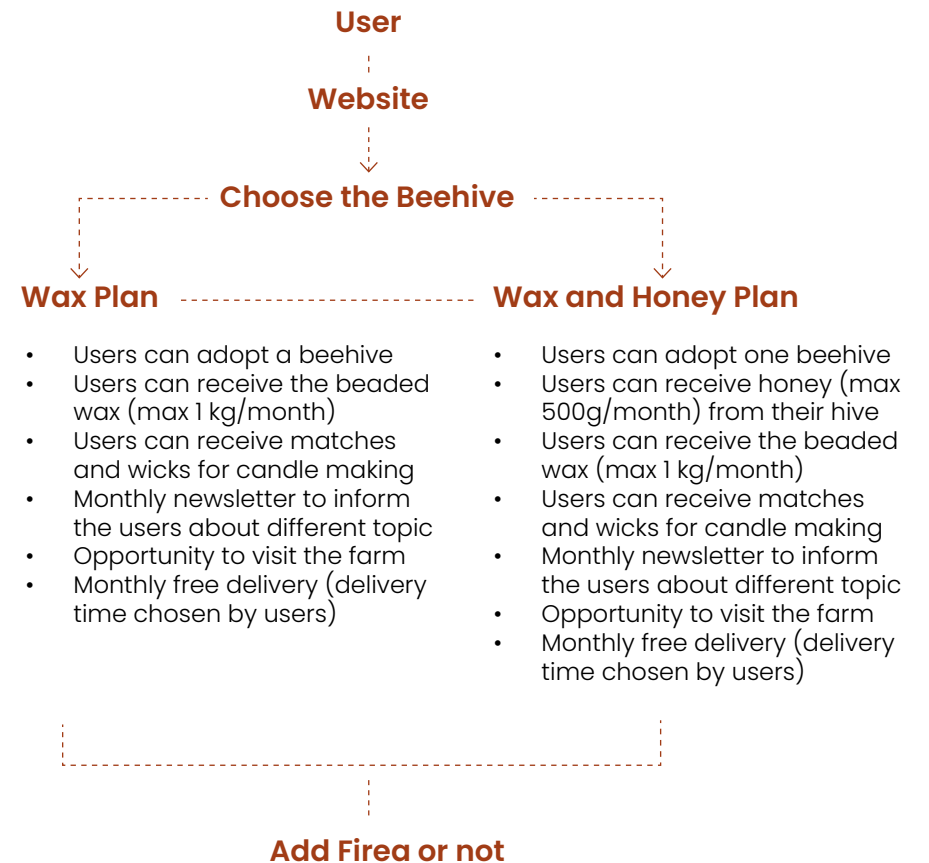
our service

subscription map

The hive adoption service is key to the whole Firea project. Through the website, the user can choose several available hives, provided by some local farms, and adopt them. The price is set by the producer, and Firea earns only a percentage of the expense. Wax (and honey in the full program) and everything needed to operate the product (matches and wicks) are included in the plans to enroll in the service. Once the hive is adopted, product deliveries can be ordered from the personal area of the site, up to a maximum of 1kg of wax per month.



There are two subscription plans, both of which deliver wax and materials for the operation of the product



our service

what we offer to the beekeepers

1. Online platform to promote their hives

Firea offers its own online platform for promoting bee hives and bee farms. By joining the program, beekeepers can promote their hives, set the price, and start the long-distance adoption processes. The money raised from adoptions will all go to the beekeeper, who can use it as he sees fit to support his business; only a percentage will go to Firea.

2. Introduction to the program and instructions on operation

We need farmers to manage the beehives adopted by users. Farmers need to understand how to categorize hives according to subscription and user needs. Therefore, we introduce an online training, at the time of joining the program, that explains how the whole system works.

3. Simplified shipping service

We provide everything needed to package and ship the products: bags, boxes, certificates and wicks. The beekeeper only needs to fill them and ship them through the postal system.

4. Training about how to lead visitors to visit the farm

Farmers are familiar with their farms, but they don't know how to interact with visitors. Through this training, farmers can learn how to communicate with visitors and how to better introduce their farms.

5. Regular meetings with other participants and nature organizations

During the tour, visitors will ask the farmers some questions. This meetings allow farmers to learn about the latest situation of other farms, as well as the latest information about nature through natural organizations, so as to provide visitors with more professional introductions and explanations.

our service

farm visits

It is Firea's goal to increase awareness of natural raw materials and information about the potential of their use. Local and sustainable production goes hand in hand with the whole concept of nature in our service. In a nutshell, why can't we warm ourselves with what is around us and is easily accessible? This is precisely why we have introduced into our service a way to learn about the production of the raw material that is going to be consumed, giving value not only to the product itself but also to its production.



This diagram shows the various steps for visiting the hives

1. Book an appointment on the website

Prior to the visit, users must book an appointment on the Firea website, choosing the company and the time they wish to visit. When the appointment is confirmed by Firea, users will receive a confirmation e-mail.

2. Sign at the farm

When users arrive at the farm, they have to register at the farm's reception, the staff will organise the different guided tours.

3. Meet farm staff

Users must wait at the reception desk, the staff will provide them with masks and protective clothing; when the staff conducting the tour arrives at the reception desk, users can begin their visit to the farm.

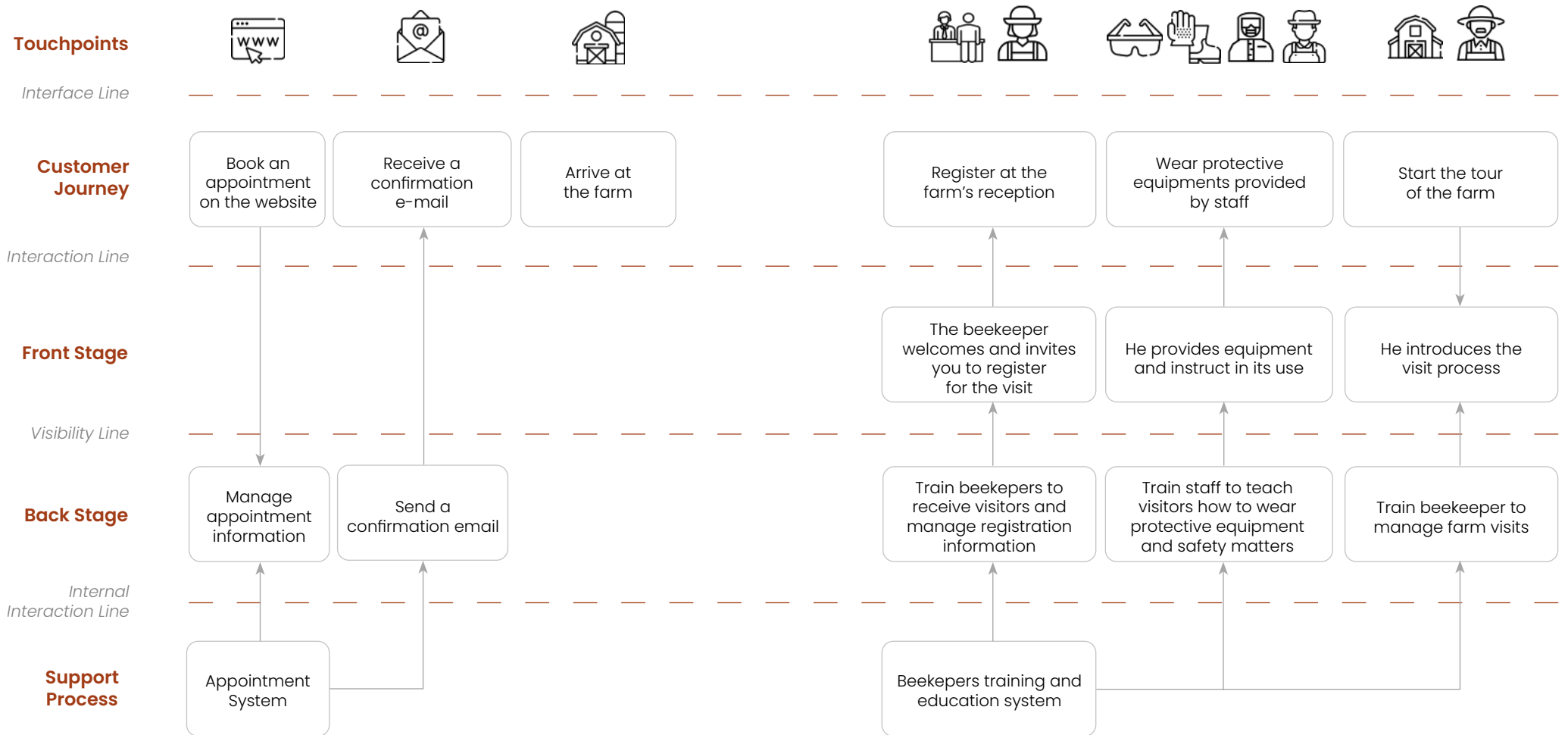
4. Visit in the farm

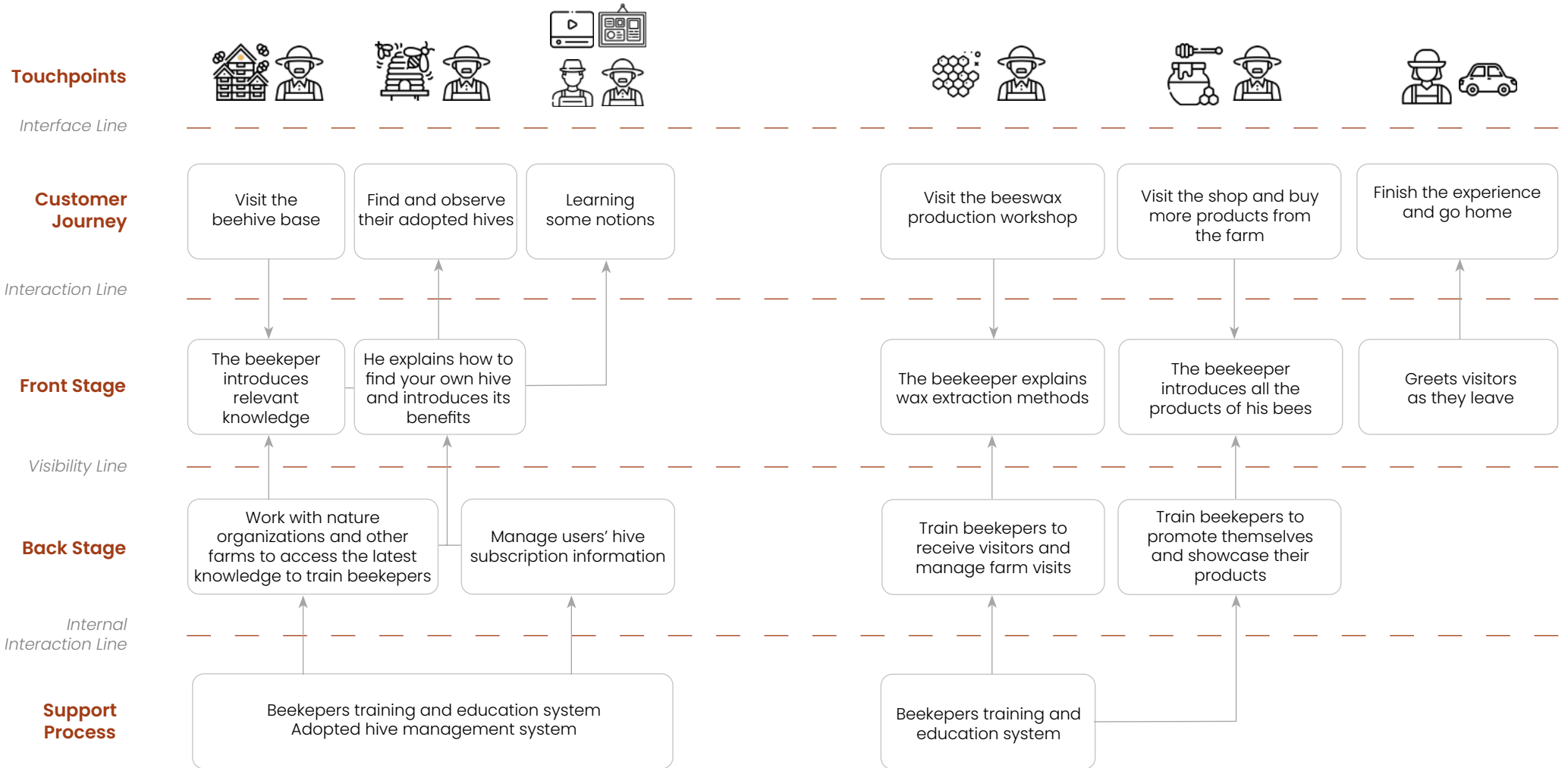
There are different types of guided tours depending on the farm. On the 'discovering bees' tour:

- At the beginning of the tour, users will visit the farm.
- Afterwards, staff will take them to visit the beehive base, where users can find their own adopted hives. At the same time, experts will explain to them how bees produce honey, what it can be used for, and so on.
- At the end of the visit, users will be able to visit the beeswax production workshop, where experts will explain how it is extracted, processed and the different properties of this material.
- Lastly, Beekeepers will be able to promote and put their products on sale.

our service

farm visits blueprint





our service

business model canvas

<p>Key Partners</p> <ul style="list-style-type: none"> • Suppliers of terracotta • Suppliers of fabrics • Suppliers of wood • Bee farms • Warehouse managers • Website (Online shop) builders and operators in partnership • Media 	<p>Key Activities</p> <ul style="list-style-type: none"> • Research and development • Products design and manufacture • Products online & offline retail • Online website design and operation • Cooperation with product component suppliers • Regular newsletters • Farm experience activity design • User's beehive subscription dynamics • Brand promotion 		<p>Value Proposition</p> <ul style="list-style-type: none"> • Connect renewable resources and urgent heating needs for natural warmth • Achieve a new lifestyle and habits of heating that is friendly to nature and sustainable • Provide more opportunities to be closer to nature • Improve an understanding and knowledge of nature and ecology • Supporting local wax producers and bee protection 	<p>Customer Relations</p> <ul style="list-style-type: none"> • Personal assistance: to make sure that all customers get all the detailed information they need • Customer newsletters registration status assistance • Customer beehive subscription service assistance • Customer farm experience assistance
<p>Key Resources</p> <ul style="list-style-type: none"> • Design and production • Cooperation with bee farms and affiliated offline shops • Supply and cooperation of product components • Intellectual / Human resources • Website programs • Website (Online shop) management and maintenance 			<p>Channels</p> <ul style="list-style-type: none"> • Offline retail shops • Websites (Online shop) • Media • Communication between users • Advertisements • Booklet 	<p>Customer Segments</p> <ul style="list-style-type: none"> • Green buyers • The energy poor • Nature lovers • Sustainability Advocates • People in need of warmth
<p>Cost Structure</p> <ul style="list-style-type: none"> • Employees • Cost of materials • Distribution • Promotion costs • Website build and operating costs • Professional newsletter content acquisition costs • Beekeeper training • Farm experience organization costs 			<p>Revenue Streams</p> <ul style="list-style-type: none"> • Product sales • Beehive adoption subscription Fee • Farm experience booking fees 	



our target

persona: Laura

Bio

Laura is 22 years old and lives in Milan. She suffers from energy poverty in the winter, but at the same time, she is sensitive to the issue of sustainability and does not want her heating behavior to put a new burden on the environment. Laura is trying to find a new way to achieve sustainable heating for her cold winters.

Needs & wants

- Wants to use sustainable resources for heating
- Wants to use heating energy that is kind to nature and the environment
- Wants to reduce home heating expenses

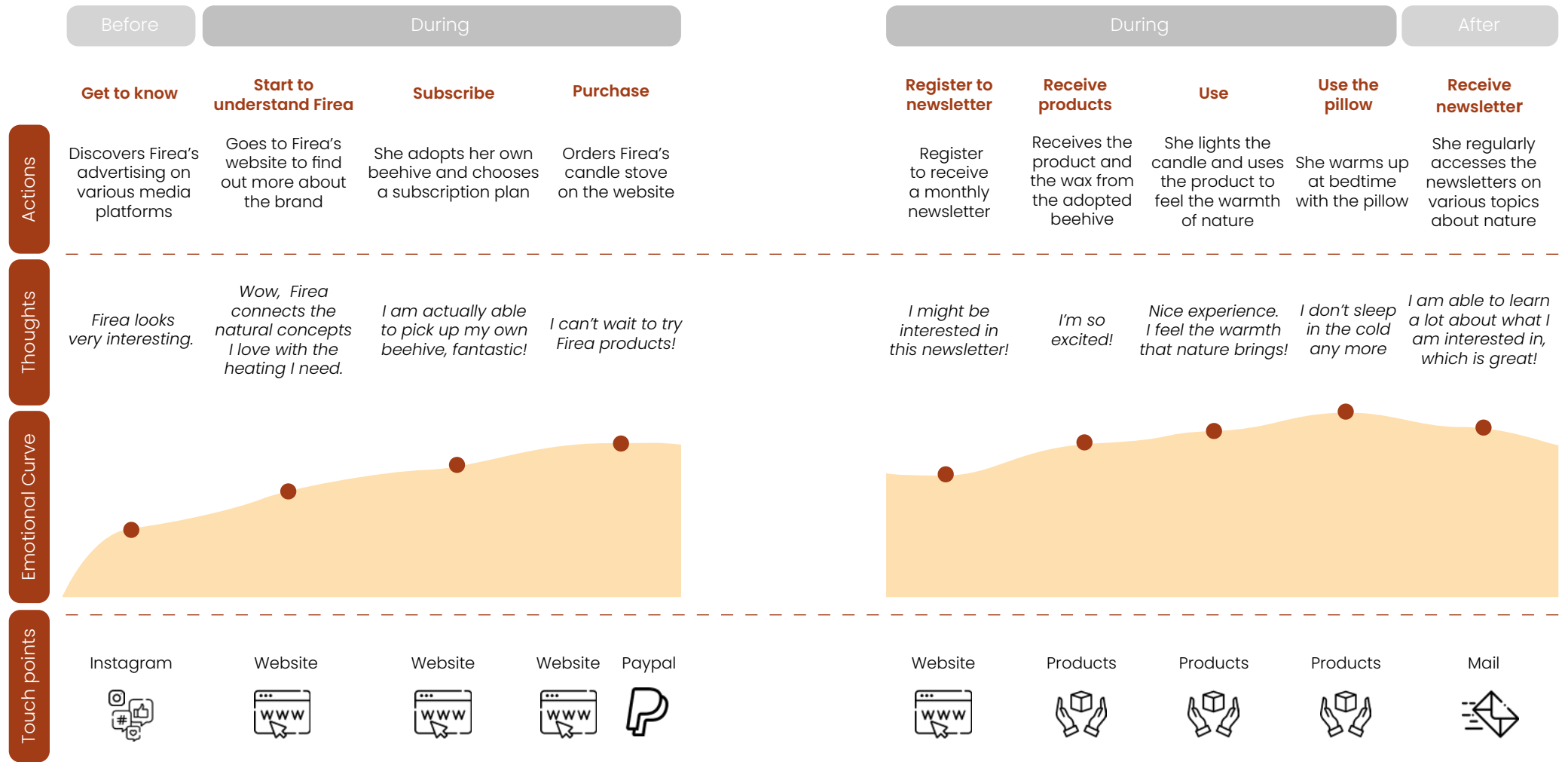
Pains

- Current heating models consume large amounts of non-renewable energy
- Traditional heating systems place a heavy burden on the environment
- Spends too much money to heat her home

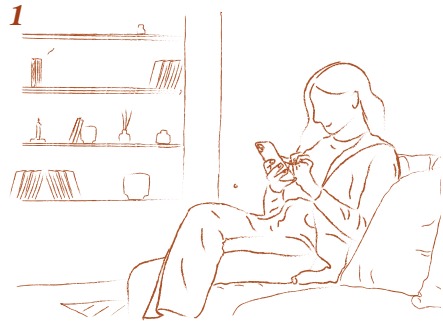
Goals

- She would like to find a sustainable, environmentally friendly, eco-friendly, and economical heating system.

Laura's experience map



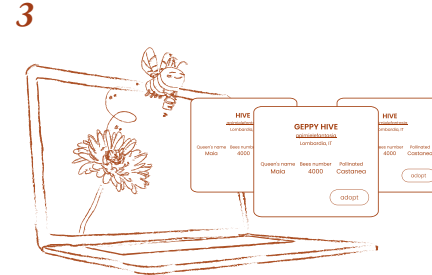
Laura's storyboard



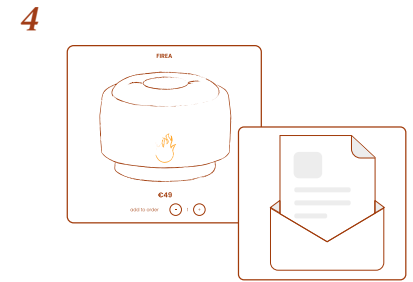
1 She discovers Firea's advertising on various media platforms



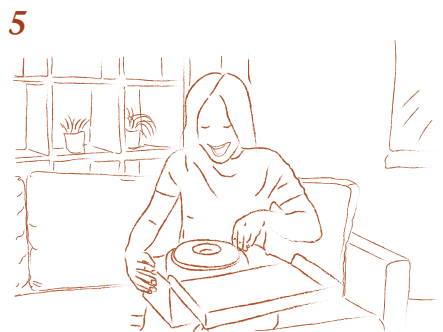
2 Goes to Firea's website to find out more about the brand



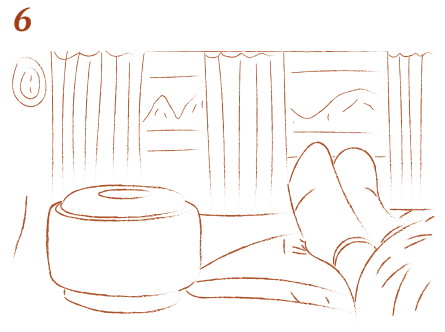
3 She adopts her own beehive and chooses a subscription plan



4 Orders Firea's candle stove on the website and register to receive a monthly newsletter



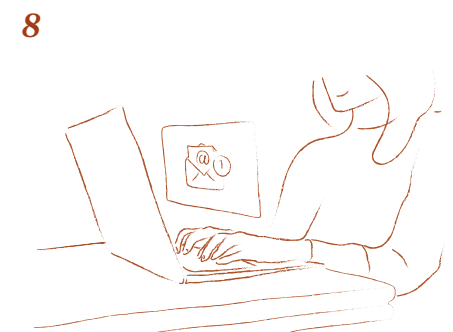
5 Receives the product and the wax from the adopted beehive



6 She lights the candle and uses the product to feel the warmth of nature



7 She warms up at bedtime with the pillow



8 She regularly accesses the newsletters on various topics about nature



our target

persona: Enrico

Bio

Enrico is 35 years old and from Sondrio, Italy. He has a passion for life and nature, with a strong interest in nature and ecology. For this reason, he reads many ecology and nature magazines in his spare time and follows developments in the field, not only to increase his knowledge but also to find the most suitable way to approach nature. In addition, he has a deep understanding of the current energy situation in society and pursues a sustainable energy life.

Needs & wants

- He wants to be regularly provided with up-to-date knowledge and developments on nature and ecology
- He wants to live a more sustainable life
- He wants to find opportunities and channels to get closer to nature

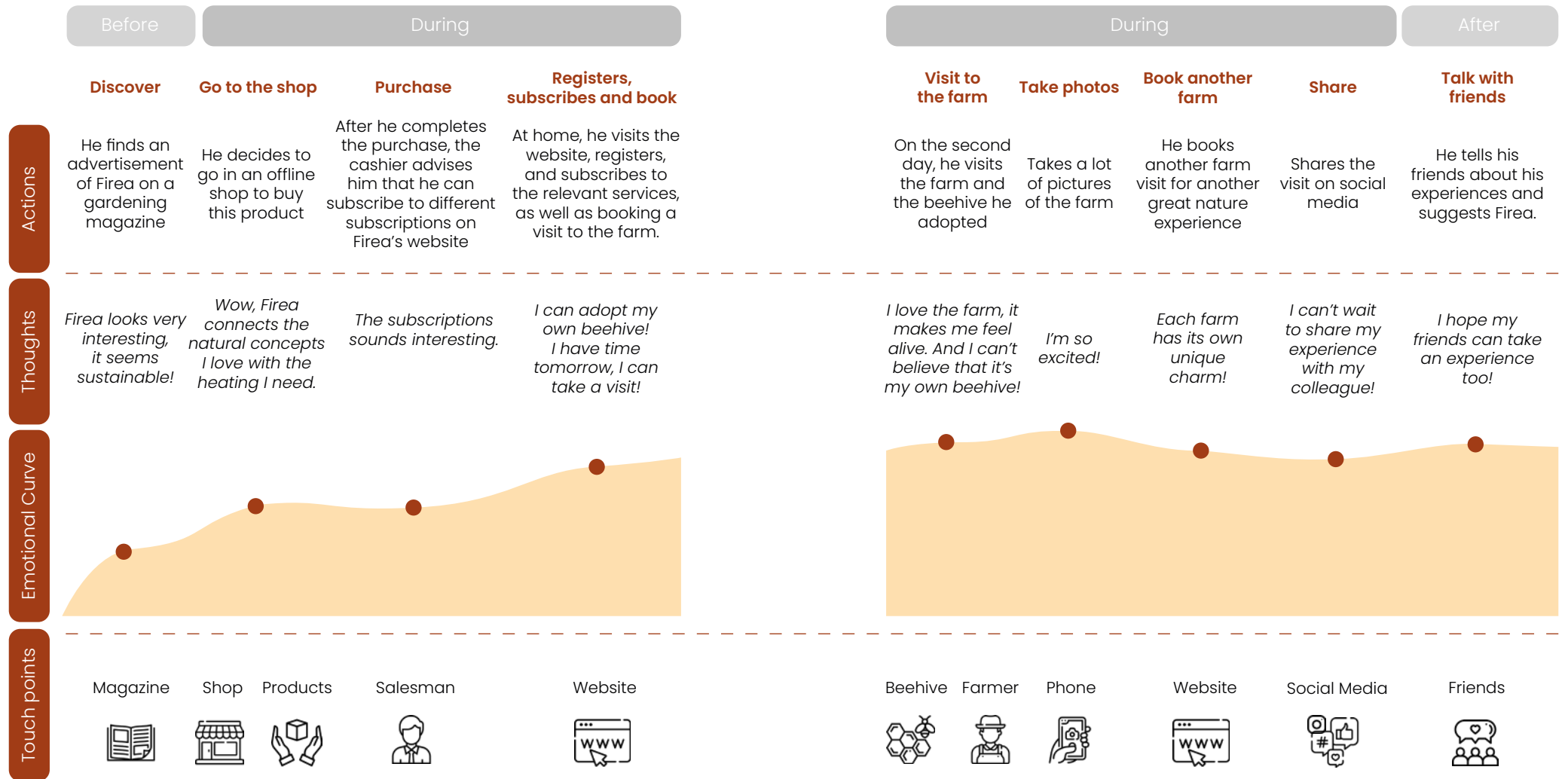
Pains

- Enrico sometimes does not have the latest dynamics and new knowledge about nature and ecology in a timely manner
- Enrico does not have many opportunities to be close to nature

Goals

- He wants to have more opportunities to maintain understanding and access to nature and to develop a sustainable way of life.

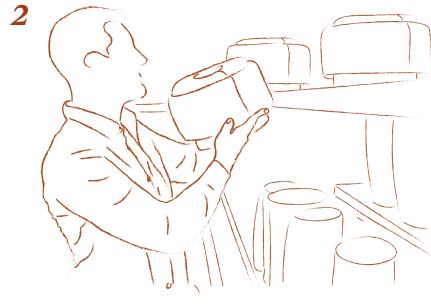
Enrico's experience map



Enrico's storyboard



1 He finds an advertisement of Firea on a gardening magazine



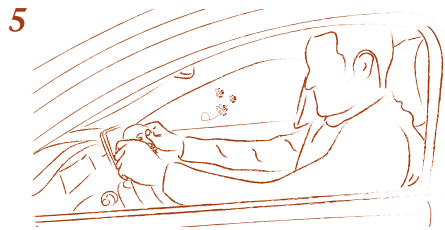
2 He decides to go in an offline shop to buy this product



3 After he completes the purchase, the cashier advises him that he can subscribe to different subscriptions on Firea's website



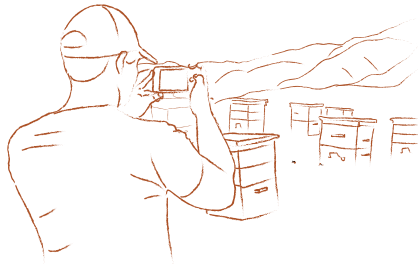
4 At home, he visits the website, registers, and subscribes to the relevant services, as well as booking a visit to the farm.



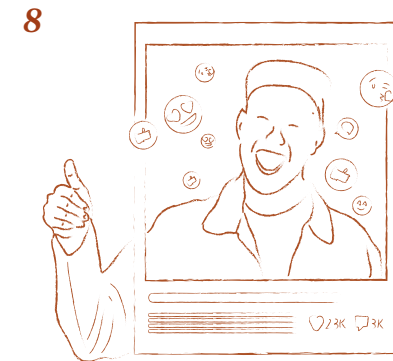
5 He visits the farm and the beehive he adopted



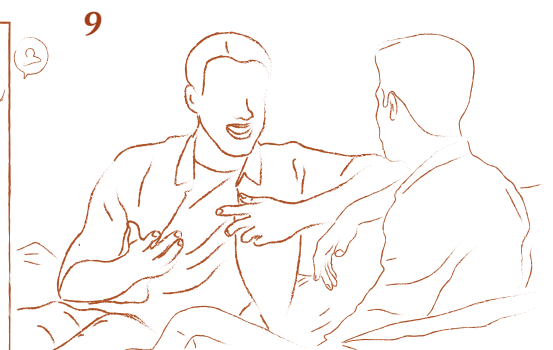
7 He books another farm visit for another great nature experience



6 He takes a lot of pictures of the farm



8 He shares the visit on social media



9 He tells his friends about his experiences and suggests Firea

03

product

a new type of candle heater



What is our product?	70
Components	72
The pillow	74
The candle	77
How to use it	78
How it works	80
Materials	82

A new type of heater, which uses
and enhances only natural raw materials,
to make you feel *the warmth of nature*



What is our product?

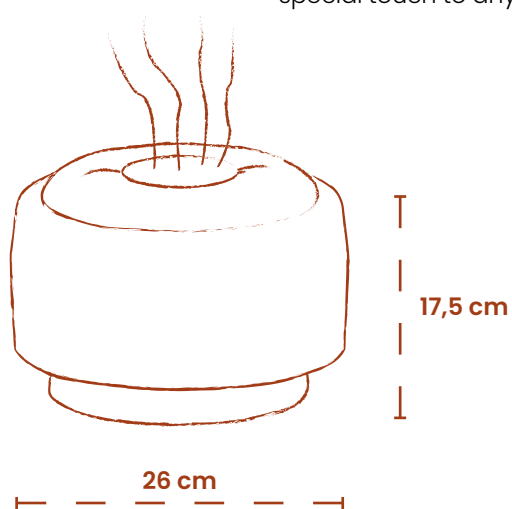
our product

what is our product?

Our product is a heating system that reuses the natural resources we have in our environment and provides us with a bubble of comfort and a stable temperature. Using only fire, wood, rice, wool, and terracotta as raw materials, it becomes a fully accessible product, away from complicated and unsustainable technologies. By harnessing only the physical and thermal capabilities of these materials, very satisfying results can be achieved.

In addition to its sustainable value, our candle stove aims to attract and make a simple product a meeting point. Achieving a cozy, comfortable, and warm space that allows unique moments to be spent with family and friends.

On the other hand, it also performs a decorative function, as it integrates very well into any environment and is a very pleasant and natural product to look at. It is very adaptable and gives a special touch to any space.





Pillow: made of wool and filled with rice. It is in contact with the terracotta top and thus heats up in a very short time. There is a hole in the center of the pillow that allows hot air to pass through. Rice allows the pillow to fit any part of the human body, and because of its thermal capabilities, the temperature can be kept for about half an hour.

Cover: made of terracotta, it has a hole at the top that allows hot air to pass through. It surrounds the smaller pieces and allows the pillow to be heated.

Inner lid: made of terracotta, whose main purpose is functional. It directs the heat of the candle and leaves a single outlet at the top of the piece.

Wooden wick: It rests on the base and is covered with beeswax. When lit, it generates a unique ambiance and sound.

Base: made of terracotta. It has a concave shape on which to rest the wooden wick and beeswax beads.

The pillow

As already mentioned, the cushion is one of the most important elements of the candle stove, as it helps the user to focus heat more specifically and on the parts where it is most needed.

It gets warm during the operation of the stove, capturing and retaining heat from the surface of the terracotta. It is able to retain heat for half an hour, providing relief and comfort to the part of the body where it is applied. thanks to the rice padding, it easily fits any part of the body.



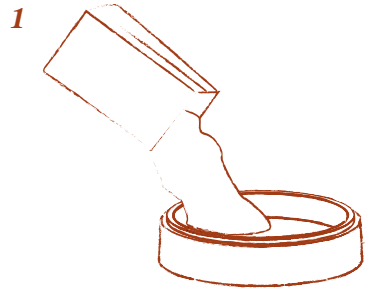


The candle

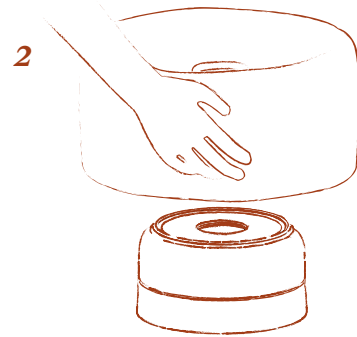
There are two other elements that are part of the product. On one hand, the matches, and on the other hand, the beeswax. They are essential parts of the stove, as they make possible the interaction between the user and the product. With the help of the matches, the user is able to light the candle through the top hole. This is a simple action, somewhat reminiscent of the old heating systems, where human intervention was required to start these heat sources.



How to use it



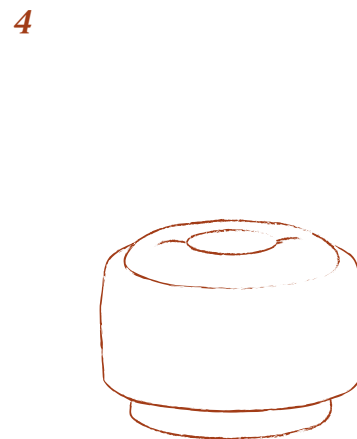
1 Fill the base with beeswax beads and wicks



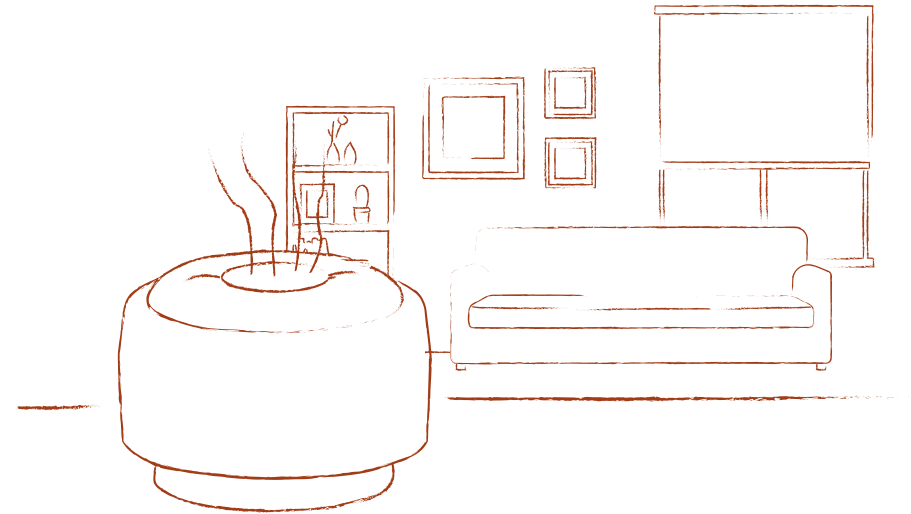
2 Place the two remaining pieces of the product



3 Use the matches provided with the wax to light the candle



4 Put the pillow on top and wait for the heater to warm up



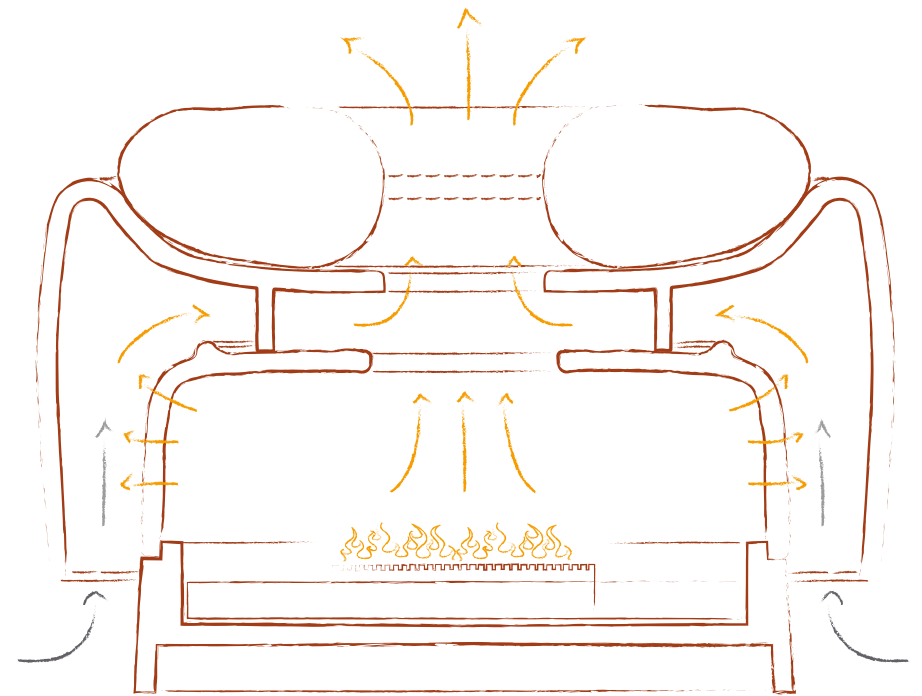
5 use the heater to heat the air or use the heated cushion to your liking on the body



our method

how it works

The stove uses an air current system that allows heat to be retained and provided for as long as possible. Thanks to the thermal properties of terracotta and high-quality smokeless candles, Firea provides us with a clean source of combustion while spreading a pleasant warmth. It takes advantage of the thermal capabilities of the materials, and the shape of the pieces, to capture the heat produced by the burning of the wax and channel it upward, allowing the heating of a small room and the cushion.

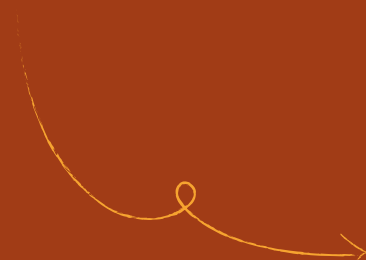


The heat from the candles is channeled and transforms the cold air from below into a warm stream, thus going on to heat not only the air, but also the rice cushion placed above it

04

communication

our brand and visual identity



Vision and mission	86
Our values	88
Our logo	90
Our personality	92
Color palette	94
Typography	96
Wax packaging	98
Website	104
Newsletter	108
Instagram	110
Magazine ads	114

our brand

vision and mission

What we want to achieve

Nature is capable of giving us so many useful elements, we believe that using these resources can help people by being a more accessible and inclusive source of energy. The benefits can be ambivalent: by recognizing nature's merits, we can support and protect her, thereby increasing awareness and helping biodiversity.

Inclusivity
Protection

How we want to do it

We want to simplify home heating so that we can make it easier and more inclusive. To this end, we have created a service product system that enables people to warm themselves using elements provided by nature, harnessing the physical and thermal capabilities of materials, fire, and beeswax. Our goal is to use them to improve the way people heat themselves, while also increasing awareness of raw materials and supporting conscious consumption.

Simplicity
Enhancement of nature

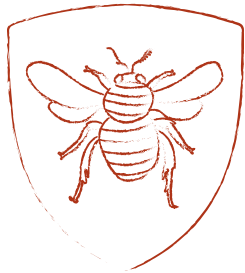
our brand

our values



Inclusivity

We believe that everyone should have access to an easily usable, readily available, and attainable form of heat. Large energy suppliers have already challenged this by stressing access to energy. We are therefore committed, through the use of natural raw materials, to creating a source of energy that is potentially accessible by anyone, without having to rely on a large supplier.



Protection

Nature is essential, and protecting the world we live in is something we hold dear. This is precisely why we are focused on bees: insects with a fundamental role in natural and agricultural ecosystems through pollination processes. If bees disappeared completely, our planet's biodiversity would be greatly affected, leading to the disappearance of thousands of species of plants, flowers, and fruit trees.



Simplicity

We believe that cutting-edge and increasingly futuristic technologies are not always the most effective answer. We try to take a step back, looking for a simpler form of heat that everyone can intuitively understand. We return to the oldest source of heat, fire, an element that since ancient times has always helped us to keep warm.



Enhancement of nature

Nature is a fundamental element for us. We believe that nature can provide us with all the elements we need to provide the same benefits as classic heating systems. We want to enhance its products, showing everyone the benefits and potential that nature can give us back.

our brand

our logo

Naming

Firea is a simple reworking of “fire,” a term that leads back both to the source of heat used by the product, but also to something warm and welcoming. A final “A” has been added to the word fire, turning it almost into a feminine name. This addition has a twofold function, on the one hand abstracting the word fire, and on the other hand, returning an even warmer and cozy sound.


Logotype

We chose to go for a very simple and clean logotype, we characterized it by separating the first two syllables with a dot, thereby improving the cadence of the reading.

Payoff

Our payoff fully represents the goals and at the same time the commitment of the brand. “The warmth of nature” summarizes the goal of the whole product-service system, implying warmth with two different meanings: physical, given by the product, but also figurative, implying the helpfulness and welcoming aspect of nature.

The dot is used to interrupt the word and separate the fi-re syllables, so as to abstract the reference to the fire and allow a better reading of the logotype



FI·REA
the warmth of nature

We have two versions, one extended (upper) and one reduced (lower).



the warmth of nature
F·

In the shortened version only the initial F is retained, accompanied by the dot also present in the extended version, becoming a shared element.

our brand identity

our personality

We want Firea to be a warm and accepting place where everyone can feel welcome. Since nature is one of the fundamental elements, we chose to make it the protagonist of all communication. As you can see from the moodboard on the right, nature is our main source of inspiration.

Tone of voice

Firea communicates in a direct way to the user, enthusiastically and proudly showing its activities, trying to engage users whenever there is an opportunity. Firea seeks to engage its users by introducing them to new information and curiosities, with the goal of increasing awareness about natural raw materials and information about the potential of their use. In summary we can describe Firea communication as:

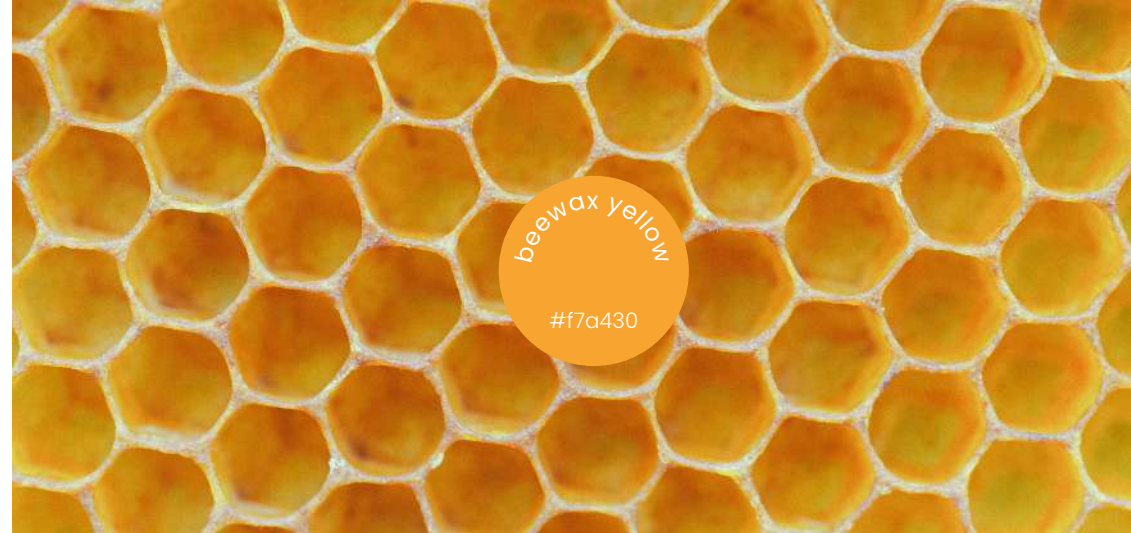
- **Engaging**
- **Delicate**
- **Enthusiastic**
- **Welcoming**



our brand identity

color palette

We have chosen to work with very warm and natural colors, given the ultimate purpose of Firea. They are all colors reminiscent of the natural elements used in the project: from terracotta red to wax yellow to forest green. The colors are important in our project: they are meant to give the feeling of something warm and welcoming (thus in line with the tone of voice), and to return at first glance the idea of something natural, delicate and cozy.



our brand identity

typography

We chose to put two fonts side by side, a serif and a sans serif one, both characterized by the gentleness of the curves and a delicate appearance. A special aspect is the circular lettering, which appears in a few places to enhance the content of the communication.

poppins light
ivyjournal semibold italic

Headlines and short texts with large dimensions are treated in this way: Poppins for all the writing and highlights of the main words in IvyJournal

Circular texts serve to highlight words and concepts, they often accompany images or titles.

Texts are kept very simple. Only Poppins is used.

this is a round text

this is a *header*

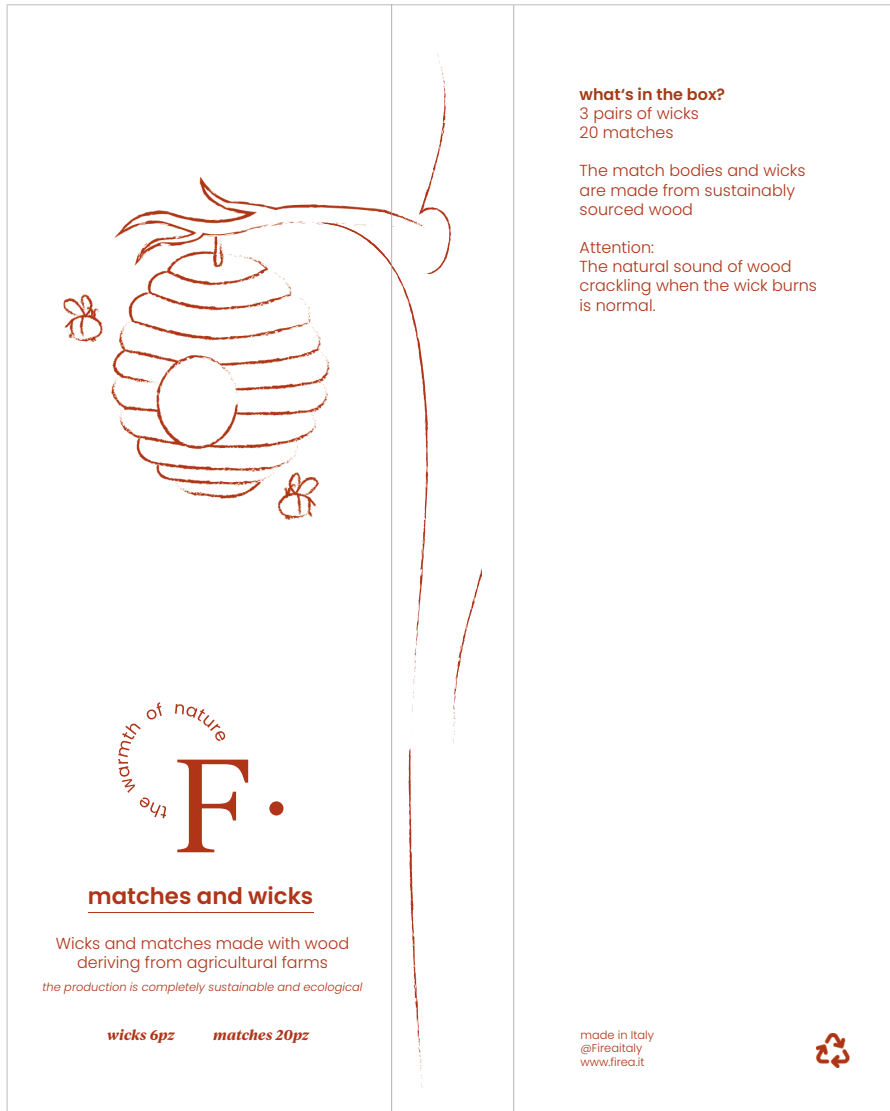
Dae sum liquam, cor alibus quassinum archil maiore re velignitatem volupta ssequam, consera es ad molorerum ratur, ut ea core natur maiorro invenditatem qui conesec tumquiatiat quis di tetus alit ex explibus eum as es as reped que nam erro bero ius, totam laboriam, utat et am esti voluptae etus mi, vollum et qui dolumqui ut explautem vid ullenih illecupa dollo dicit maximus.

our communication

wax packaging

Wax packaging is the main physical touchpoint of the service that Firea offers. By signing up for the service and adopting a hive, the user can request, from the personal area of the website, the delivery of the wax to their home. Firea takes care of providing all participating beekeepers with boxes with everything they need to package the products: bags, labels, and boxes with wicks and matches.





In this box there are wicks and matches to light candles.



Wax arrives at home in paper bags. The bags are supplied by Firea to the beekeeper, who then packages the product and ships it to the customer.

When a hive is adopted, at the first wax delivery you also receive in the box a certificate containing the information of the chosen hive.



Firea's Hives Project

Certificate of bee Adoption

This certificate is provided for your support of the firea bee Hives Project. With your support, you have helped local wax production and bee protection.

These products are produced by the hive:

of the farm:

F I · R E A

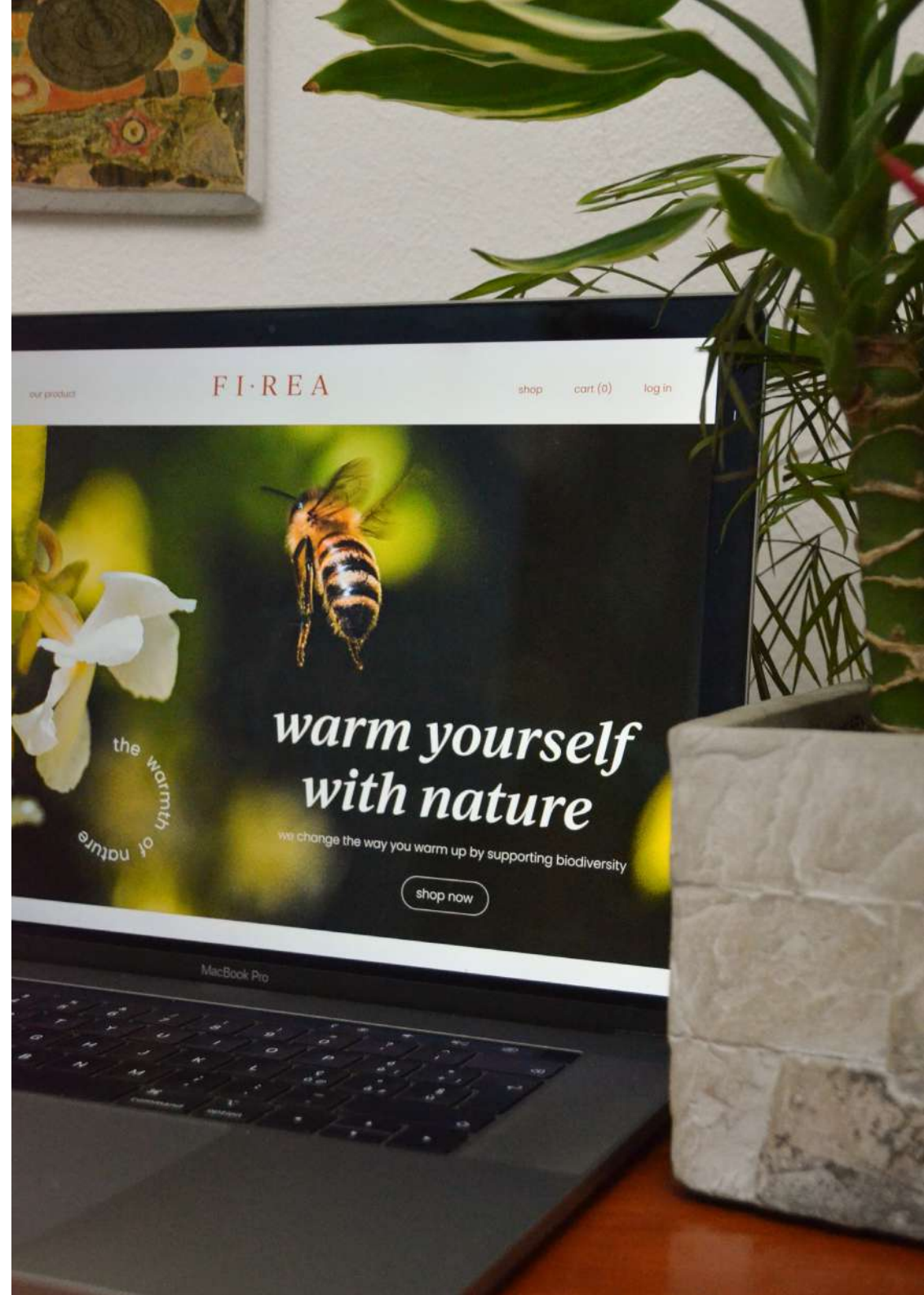
The certificate has spaces where the beekeeper can write the information of the adopted hive



our communication
website

The website is an important touchpoint for Firea, as it is the main place to approach the product and service. From here you can access the hive adoption service, learn about the brand's activities and commitment, and learn about the product's features and benefits.

The homepage of the website opens with the header: "warm yourself with nature"

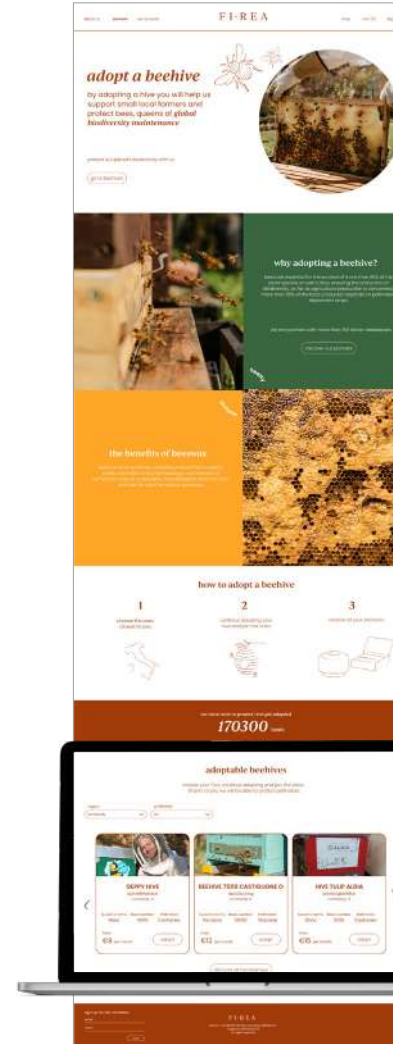




Firea homepage, with a newsletter subscription banner at the bottom



Product explanation page: how to use it and its benefits



Subscription plan choice page

Service explanation page, number of protected bees and preview of available hives

The wax delivery service can be accessed from the website. You explore the various adoptable hives, made available by the project's partner beekeepers, and choose your preferred enrollment plan. For a fixed monthly fee, users can order from their personal area up to a maximum of one kg of wax per month.

our communication *newsletter*

From the website, through the appropriate banner, it is possible to subscribe to the Firea newsletter. This tool becomes important in brand communication because it seeks to engage the user through information and curiosity. We talk about nature in a confident and proud way to make the user better understand its potential. Our goal is to engage the user as much as possible and make them passionate about the topic.

The example proposed here seeks to increase the user's curiosity about the process of wax production by giving them insights, information, and trivia.

At the end there are links to explore the topic further

articles that might interest...



BEESWAX: WHAT IT IS USED FOR

While other animals bees independently produce the substance with which they create...



USES AND PROPERTIES OF BEESWAX

Beeswax is produced by young worker bees that are equipped with special glands capable of...



HOW THE WAX IS EXTRACTED

Wax can be obtained from the operculum, i.e. the cap that bees build to seal the cells...



FI-REA

how is beeswax produced?

We always try to use natural materials, and beeswax is a perfect fit for our purposes. We collaborate with many beekeepers in Italy to offer you this material, but do you know how it is produced?

Find out who our partners are



did you know that...

Since ancient times, philosophers and scholars have wondered about the origin of beeswax and this topic still arouses particular interest today. The famous Greek philosopher Aristotle believed that beeswax came from flowers, this belief survived until the Renaissance. In 1744, the German researcher Hornbostel came to the conclusion that bees themselves produce the wax. His theory appeared in a journal that was not widely circulated and therefore remained muted until the end of the century. It was not until 1782, in fact, thanks to Hutton's observations, and later in 1802 to those of the Swiss researcher Huber, that our knowledge of how bees produce wax was deepened. In 1806, Dreyling published a study on the secretion of wax by bees for the first time in Germany.



Beekeeper Karlene tells us: "There are different methods of wax extraction at the time of melting, the cocoons act as an absorbent material, forcing me to implement special extraction methods to obtain profitable yields."

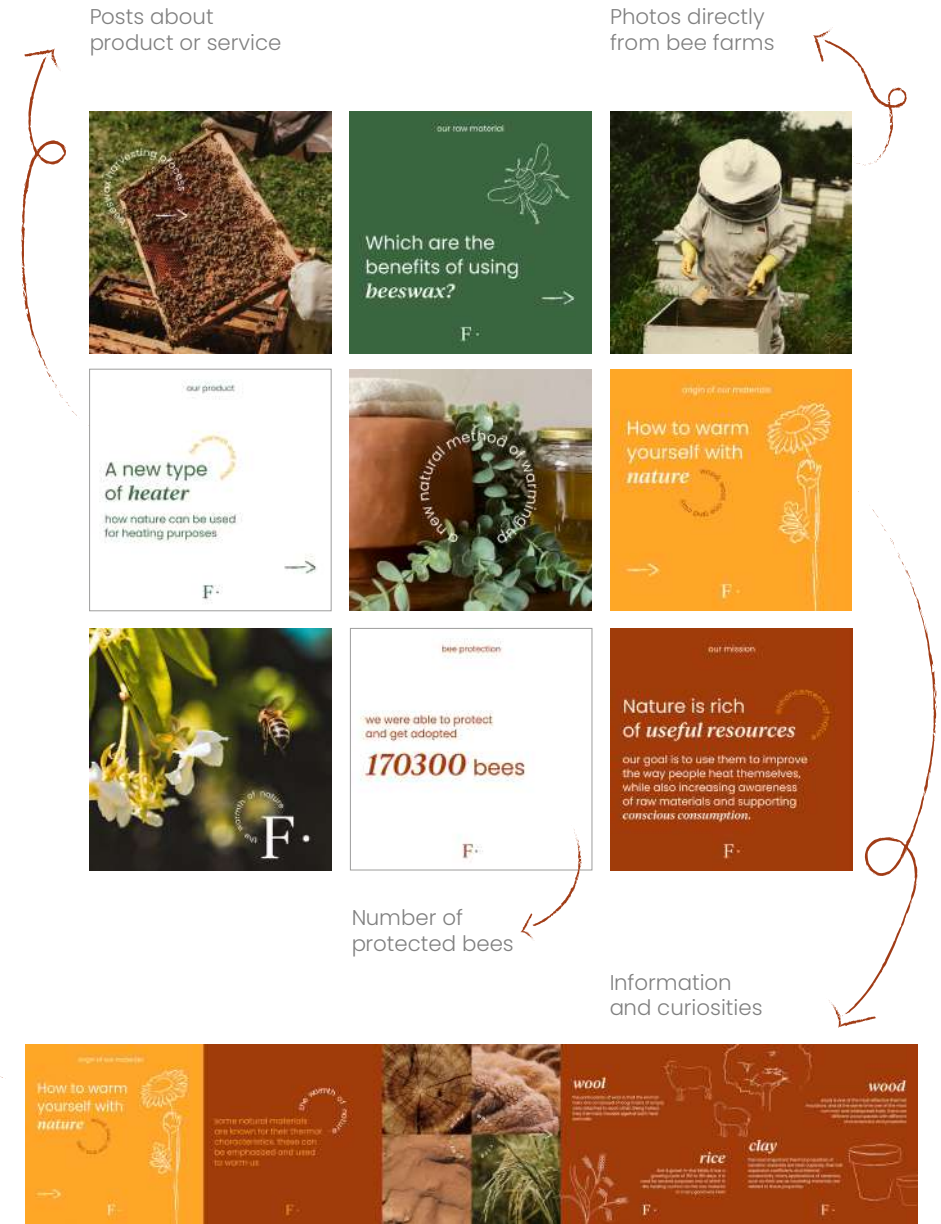
the boiling method

1. Immersion: the combs are placed in a juke tank, completely submerged in hot water and brought to temperature.
2. pressing: the honeycombs immersed in water and brought up to temperature are then pressed and allowed to drain, still closed in the juke tank to filter the wax.
3. centrifugation: the separator mixed with hot water is placed in the centrifuge, the wax can be collected.

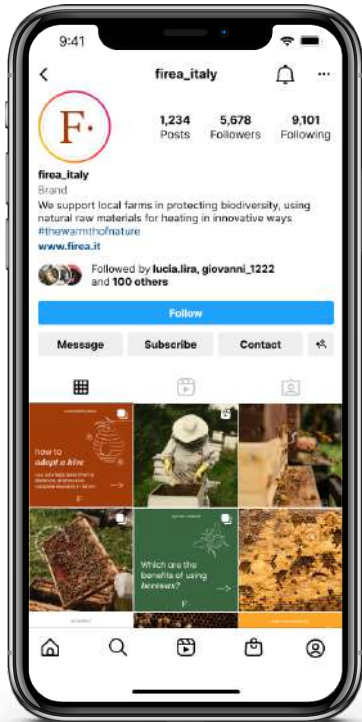
Each newsletter explores a specific topic with trivia and information.

our communication *instagram*

We use instagram as our main communication medium. Posts and stories communicate the company's activities, its product, its services, but also the activities of the various beekeepers who are affiliated with us. Firea's social profiles aim to raise awareness of the brand, and at the same time increase awareness of natural raw materials by providing information and curiosity on a variety of related topics.

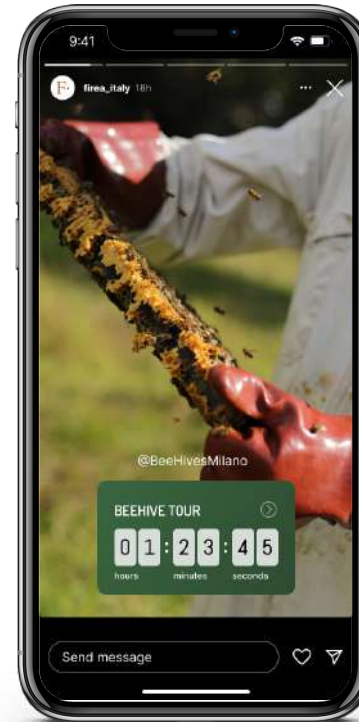


Firea's main feed

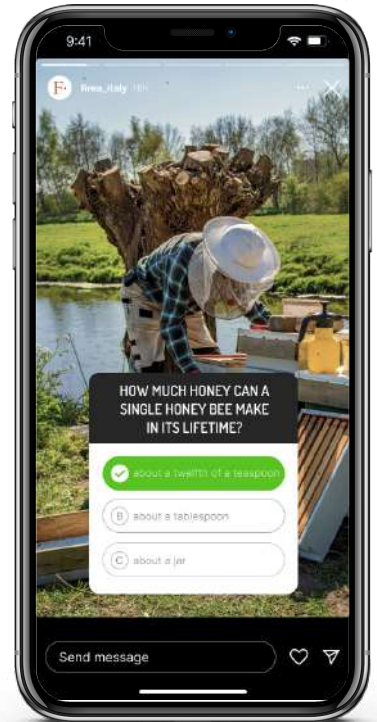


An ig story to sponsor the product, with a link to the online shop

An ig story with a bee quiz: the informational aspect started in the posts, continues in the stories as well



An ig story to promote an event: an open tour to a bee farm



our communication
magazine ads

We also promote Firea in some magazines. Unlike other media, magazines, especially specialized ones, allow us to target our advertisements to very specific users. Magazines about gardening, nature, the environment, but also home and personal wellness, allow us to fragment the user base by reaching those who are already interested in these nature topics.



05

annexes

the process we followed

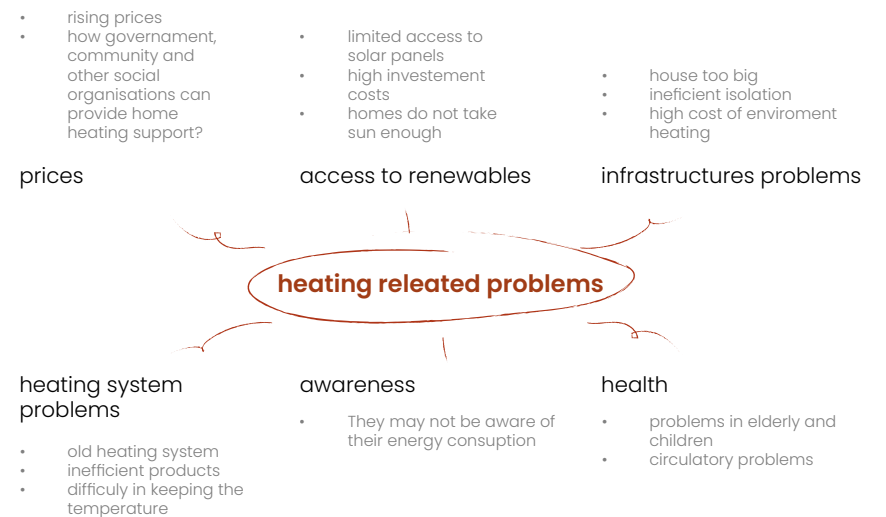


Ideation and conceptualization	118
Product's Criteria	120
Shape Exploration	122
Prototyping	124

annex
ideation and conceptualization

For the ideation and conceptualization process, we started with a series of simple questions, how can we keep our body warm? What problems are there related to heating at home? Which users suffer the most from this difficulty? etc. from there, we held several brainstorming sessions, in which we explored different solutions and ideas.

Here is a summary of our initial brainstorming: what are the main issues, and what are the most intuitive ways to warm up?



annex

product's criteria

- Must be able to warm air and body
- Use of natural and recyclable products
- Do not generate any type of waste
- Strong and stable structure
- Necessary size to be able to transport and move it easily; and sufficient to be able to perform its function correctly.
- Do not generate annoying or harmful fumes
- Simple assembly and disassembly system, do not use complex joints
- Aesthetic appearance and with an organic style
- It must accompany the philosophy of the brand
- Easy to clean
- Economic

Operating references

To solve this problem, we inquired about some existing systems, trying to fully understand how they work.



Flower pot heater: the heater works by concentrating all the heat from a tiny candle flame into a single point and then helping it to radiate outward. It is vital to leave space for air to travel under the pot's foundation so the fire can have enough oxygen to continue burning and so that air may flow in to get trapped and warmed.

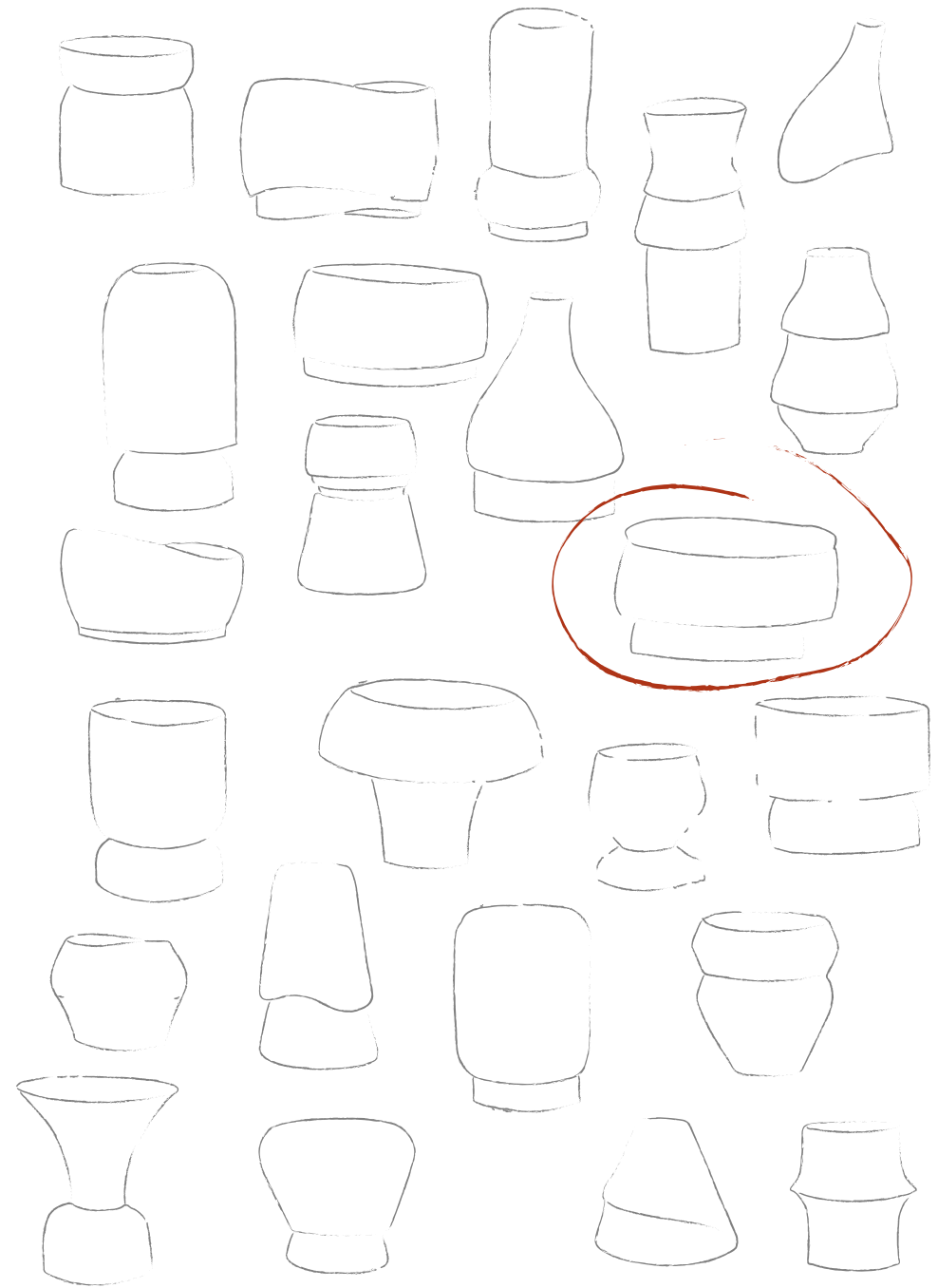


Rice Heating Pad: this system is a very simple fabric bag filled with rice. When microwaved it retains heat for half an hour, and when placed on the neck or any other part of the body, it acts like a traditional hot water bag.

annex

shape exploration

The shape is a main element of our product, because we wanted it to be consistent with all its philosophy. That is why we opted for curved lines and very rounded edges. We wanted it to have a very organic look, and to kind of evoke an element of nature. First of all, we made several boards with this organic style that we wanted to adopt, and later, we began the sketching stage, where little by little, we got closer to the final result. It seemed very attractive to us to play with a shape made up of two different parts, but at the same time, they were integrated with each other.

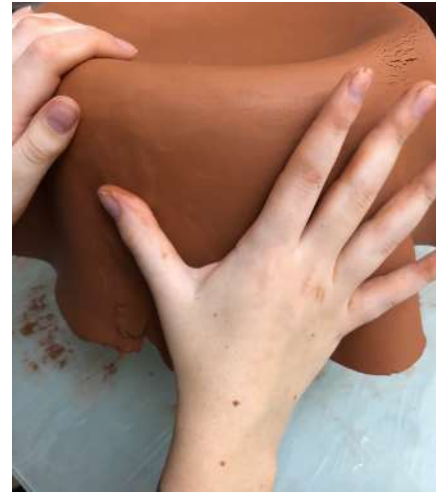


annex *prototyping*

The prototyping consisted of two parts, the creation of the main body and the cushion. For the base, we chose to try to use a material as close as possible to the final one, and for this, we moved toward self-hardening clay. Using the slab technique, the modeling steps were as follows:

1. Do the molds

Already having the final sketch, 3D modeling, and technical drawings, we began to make the molds of the pieces in textured polystyrene. Later, we covered the molds that we had made with a cloth so that the clay did not stick to the polystyrene.



2. Start sculpting

After rolling out slabs of clay with a rolling pin (about 8mm thick), we laid them on the molds, which helped to give us the main shape. We made the clay adhere very well to the mold, removing excess material when necessary.

3. Demolding and drying stage

This is the most delicate and critical stage. The clay shrinks by about 10 percent during drying, and it was necessary to unmold it before it began to shrink. After letting the clay dry on the mold for a few hours, we waited for it to lose its flexibility, removed the mold, and let it air dry. It took a week to have it completely dry.



4. Do the pillow

For the pillow, we cut fabric shapes and started sewing the perimeter, then inserted rice and closed it.



5. Final touches

Once the clay was completely dry, we composed the prototype, placed the cushion on the surface, and so we finished.



Bibliography

Adnkronos. (2022, September 05). Caro Energia E bollette, cosa succede se non si pagano? Retrieved December 22, 2022, from https://www.adnkronos.com/car0-energia-e-bollette-cosa-succede-se-non-si-pagano_5rCER-ZpEDyYPW8NOVLSjrB

Afp. (2022, September 06). Italy tells residents to turn down the heat to combat energy crisis. Retrieved December 22, 2022, from <https://www.thelocal.it/20220906/italy-tells-residents-to-turn-down-the-heat-to-combat-energy-crisis/>

API in estinzione: Perché Stanno Scomparendo e perché dovresti fare di tutto per impedire ciò Che Accada. (n.d.). Retrieved January 8, 2023, from <https://www.ohga.it/api-in-estinzione-perche-stanno-scomparendo-e-perche-dovremmo-fare-di-tutto-per-impedire-che-accada/>

Enciso, M. (2022, July 22). Energie Rinnovabili e Logistica: Il Futuro del Settore. Retrieved December 22, 2022, from <https://pro.packlink.it/becommerce/energia-rinnovabile-logistica/>

Energia, 8 famiglie SU 100 non reggono i costi del riscaldamento. (n.d.). Retrieved December 22, 2022, from https://www.redattoresociale.it/article/notiziario/8_famiglie_su_100_non_reggono_costi_riscaldamento_80_italiani_in_difficolta

Le Risorse Naturali e le Fonti di energia: DLive Geografia. Retrieved January 16, 2023, from <https://blog.geografia.deascuola.it/articoli/geo-inclusiva-03-le-risorse-naturali-e-le-fonti-di-energia>

HuffPost Italia. (2022, March 30). Gli italiani non riescono a pagare le bollette, gli aumenti dell'energia Mettono Ko Famiglie E imprese. Retrieved December 22, 2022, from https://www.huffingtonpost.it/economia/2022/03/30/news/bollette_boom_mancati_pagamenti-9066527/

La Voce di New York. (2022, October 06). As energy crisis deepens, Italy is set to limit heating. Retrieved December 22, 2022, from <https://lavocedinewyork.com/en/news/2022/10/06/as-energy-crisis-deepens-italy-is-set-to-limit-heating/>

Local/AFP, T. (2022, August 31). Russia's Gazprom cuts gas supply to Italy. Retrieved December 22, 2022, from <https://www.thelocal.it/20220831/russias-gazprom-cuts-gas-supply-to-italy/>

Luce e Gas Italia. (2022, November 07). Ridurre I Consumi di Energia e gas. Tra Misure Statali e consigli per risparmiare. Retrieved December 22, 2022, from <https://luceegasi-talia.it/2022/09/29/ridurre-i-consumi-di-energia-e-gas-tra-misure-statali-e-consigli-per-risparmiare/>

Luce e Gas Italia. (2022, October 10). Le Zone climatiche italiane e i periodi di accensione degli impianti di riscaldamento. Retrieved December 22, 2022, from <https://luceegasi-talia.it/2020/01/22/le-zone-climatiche-italiane-e-i-periodi-di-accensione-degli-impianti-di-riscaldamento/>

Mancini, A. (n.d.). Riscaldamento: Bollette molto più care nel prossimo inverno. Retrieved December 22, 2022, from <https://www.fondionline.it/news-fondi/riscaldamento-bollette-molto-piu-care-nel-prossimo-inverno-00035970.html>

Riscaldamento Edifici in Italia, Studio elemens: Il Peso del Settore Su ... (n.d.). Retrieved December 22, 2022, from <https://www.legambiente.it/comunicati-stampa/riscaldamento-edifici-in-italia-studio-elemens-il-peso-del-settore-su-inquinamento-e-consumi/>

The Local Italy. (2022, August 26). Italy to bring in new aid measures as energy prices soar. Retrieved December 22, 2022, from <https://www.thelocal.it/20220826/italy-to-bring-in-new-aid-measures-as-energy-prices-soar/>

When can we switch on the heating in Italy? (2022, November 07). Retrieved December 22, 2022, from <https://easymilano.com/when-can-we-switch-on-the-heating-in-italy/>



Politecnico di Milano,
School of Design, Product Service System Design,
Innovation Studio PSI, 2022-2023

Team *CTRL+Z*: Utku Ertürkan, Shuqi Lin, Monica Mingiardi,
Pablo Miron Hernandez, Alessia Toffanin, Wei Ye

Professors: Valentina Auricchio, Stefana Broadent,
Marta Corubolo, Fabio Di Liberto, Ilkka Suppanen

Tutors: Vanessa Monna, Chenfan Zhang

EVOLVING
for climate