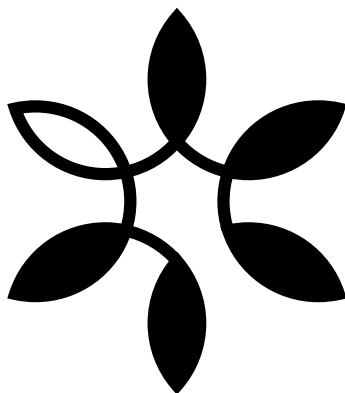


ENERGIA

Design for evolving
scenarios

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BREASE



School of Design
MSc in PSSD

Innovation Studio
A.Y. 2022/2023

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Abstract

In the next ten years, temperatures will continue to rise due to the impact of global warming, and along with the exponentially expanding energy crisis, the aging population in Italy will be among the most negatively affected by this situation. At this point, southern Italy, with its old buildings and warm climate, will need low-impact, sustainable and adaptable solutions to improve the energy efficiency of its residential buildings, thus ensuring the thermal comfort of the energy-deprived public.

In this scenario, building renovation will reduce energy costs and urban heat island effects and indirectly change energy usage habits. It can have significant positive social, environmental and economic impacts when done with smart solutions.

Brease is an easy-breezy way of improving the energy efficiency of buildings. It is a product-service designed to revitalize buildings with a breathable green facade and ensure affordability for home renovation. Brease, which is made of ceramic modules and easily mounted on the wall with a metal structure, acts as a shading panel that prevents direct sunlight from entering the house and allows the refreshed cool air to enter through the balcony or windows thanks to the plants on it.

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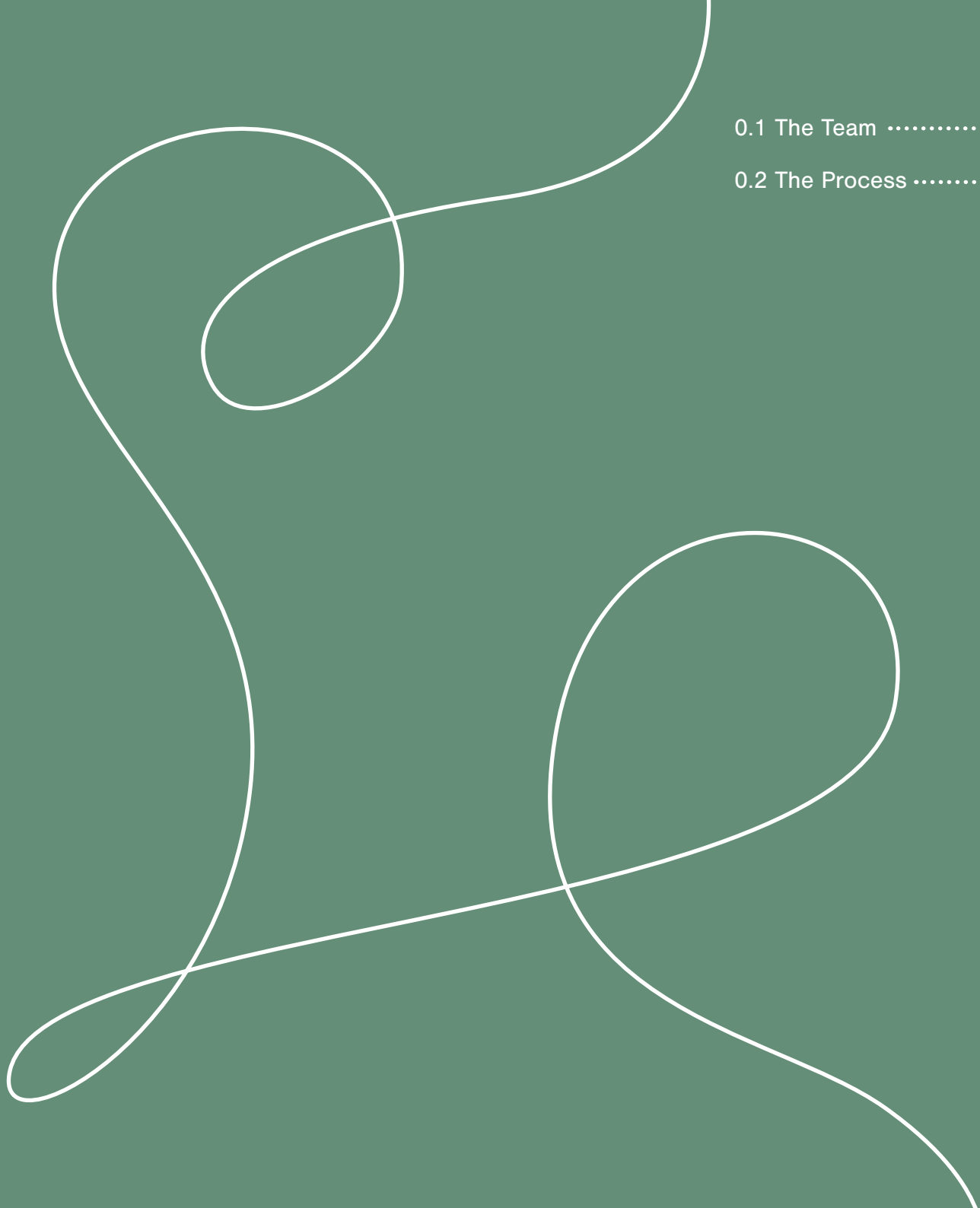
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Introduction



0.1 The Team



Iwana Raydan

Yanqianfang Sun

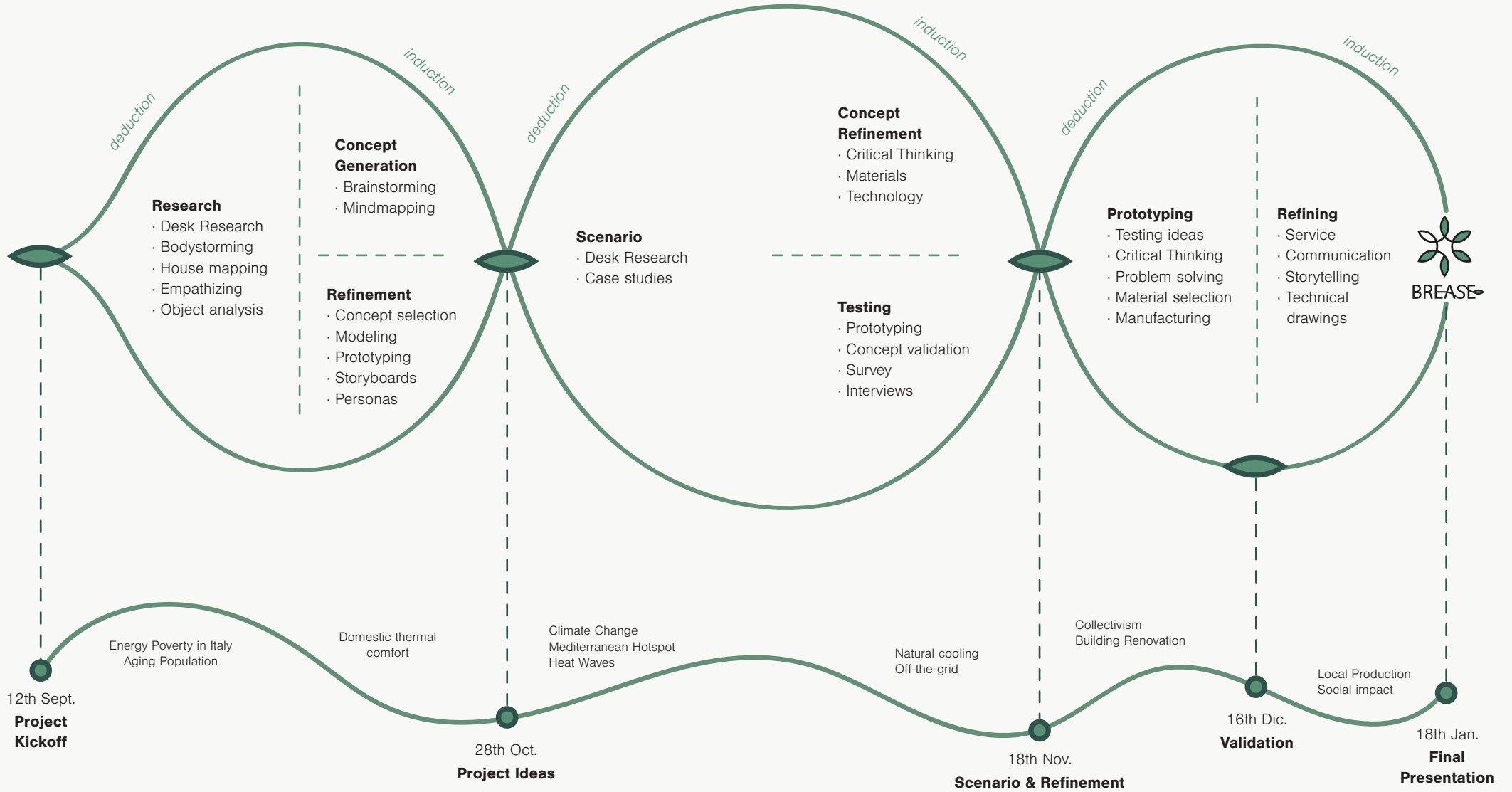
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0.2 The Process





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Scenario

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How have people kept themselves cool indoors over time?

1970's

Central air conditioning was implemented in most commercial buildings in cities.



1970's

First Oil Crisis 1973, second 1979: western world faced significant oil shortages and high prices. Return from air conditioning to less energy consuming fans.



1880's

First electric fans (standing, table and ceiling mounted). Fans were powered by humans or horses before.



1901

American inventor Willis H. Carrier built the first electrical air conditioning unit. Just a big prototype but the structure was exactly how it is set out today.

1990's

Energy used for air conditioning doubled over the span of 10 years, which made it necessary to produce energy-efficient units



2015

Paris Agreement's goal: rise in global temp. below 2 °C, reduce greenhouse gases. The built environment is responsible for 38% of total global energy related CO2 emissions.



2007

"The Energy Independence and Security Act of 2007" was stated, originally named the "Clean Energy Act of 2007"



2018-2012

Invention of solar-powered air conditioning.



2020

A Renovation Wave for Europe is published by the European Community, focusing on house renovation for energy efficiency, aiming to double annual energy renovation rates in the next 10 years.

Ongoing

Developing of sustainable energy efficient solutions.

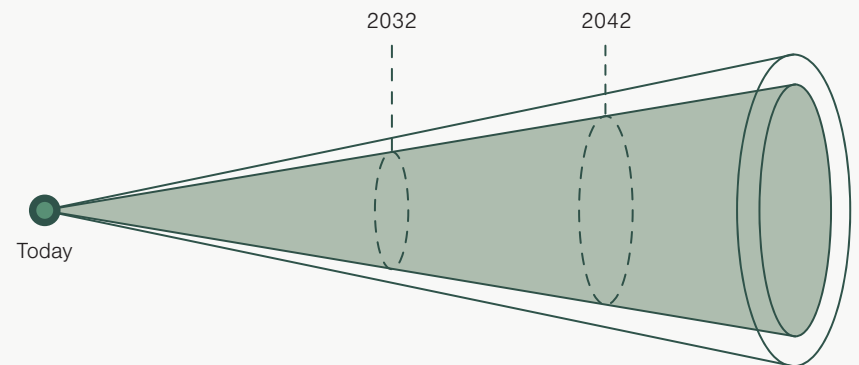
1.1 Italy, 2032

The global temperature will exceed the warning threshold of 1.5°C in comparison with the pre-industrial era around 2030. Heat waves will become recurrent in the Mediterranean hotspot and since the elderly are in mortality risk, senior citizens from many Italian urban areas will not be able to leave their homes during the summer days.

Staying at home will raise the domestic energy consumption of Italian families, and many households will be forced to adopt solutions that do not utilize energy powered sources to ensure their domestic thermal comfort.

In 10 years the Italian society will become aged, environmentally conscious, and digitized. As a consequence, the architecture of Italian urban centers will seem dramatically different. Cities will become greener and better connected with nature. The building walls and roofs will become green spaces, enhancing the biodiversity and climate in urban areas.

Buildings will function in a circular system by lowering energy demands, trash output, emissions and reusing what is necessary. Cities will evolve to net zero carbon emissions. Thus, the use of fossil fuels for heating and cooling will eventually decline and buildings will be more energy efficient, more livable, and benefit everyone's health.



1.2 Problems & Opportunities

Existing solutions for cooling houses require a lot of electricity, overload power plants in the summer, raise family energy expenditures, and are generally relied on nonrenewable energy resources, such as natural gas in Italy.

Furthermore, the majority of present alternatives are individualized. They only refresh one person or room in the house, and only a few are capable of operating on a domestic scale. These solutions return heat to the outside, negatively impacting the city environment.

Home renovation will be a way to combat energy poverty by improving the energy efficiency of dwellings, particularly in Europe, where architectural stocks are old and the worst performing buildings are primarily residential. In Italy, for instance, more than 60% of residential buildings were constructed prior to 1976, when the first energy-saving law was passed.

Despite the Italian government's offer of various financial support, there are numerous impediments to building renovation because the conditions to apply for aid are frequently difficult and the processes, too complex. Currently, there is a lack of clear and reliable information available to homeowners, as well as insufficient business and government

cooperation. As a result, there is a lack of trust in the market, as well as perceptions of high risk and transaction costs associated with renovation projects.

Efficient renewable-based thermal comfort solutions will be an integral part of home renovations in the coming years. Rather than merely guaranteeing resources to support a wave of reforms, future products and services must be prepared to facilitate processes and stimulate decision-making inside a complex system.

A Renovation Wave

In 2020, the European Commission published an official communication on energy poverty as part of the European Green Deal. "A Renovation Wave for Europe" aims to renovate 35 million building units by 2030. This effort would require €900bn of investments, thus markets for green loans and green building will grow and expand. The building sector will transform as the EU collaborates to achieve the goal of being climate-neutral by 2050.

Green Cities

By the middle of this century, 70% of the world's population will be living in cities. Urban heat island (UHI) effect makes people living in urban areas particularly vulnerable to heat waves, which will be aggravated in the future due to the acceleration of global warming. Urban green spaces are proven to reduce the UHI effect by providing shade and by cooling the air through the process of evapotranspiration. Urban centers will become green cities in the near future, by investing in green spaces, renewable energy distribution systems and sustainable buildings, aiming for net zero carbon emissions.

Closer to Nature

As people will spend more time indoors to protect themselves from extreme heat, the interior environments will be in focus. Reconnecting people with nature will become a treatment for the global environmental crisis, both to improve people's physical well-being and also because environmental awareness will spread. In a world with excess of unreliable information, people will turn to traditional and established technologies, and the preference for materials with a natural finish that provide relaxation and a sense of closeness to nature will be one of the future trends.

Current system

from

individualistic and complex



- Low energy efficiency of residential buildings.
- Individual and carbon based solutions: fossil fuel heating equipment and electric cooling devices for cooling/heating one room/house.
- Complex, expensive and slow processes for house renovation.
- Hard decision making by homeowners thanks to a lack of information about home energy efficiency and benefits of building renovation.
- Uncoordinated actions between stakeholders.

Proposed system

to

collective and easy



- Cooperation, transparency and trust in processes and information flows between companies, authorities and people.
- Empowered people and communities.
- Collective solutions for scalable futures.
- Thermal improvement in the urban scale.
- Affordable and low-impact solutions.
- Reconnecting people with nature.

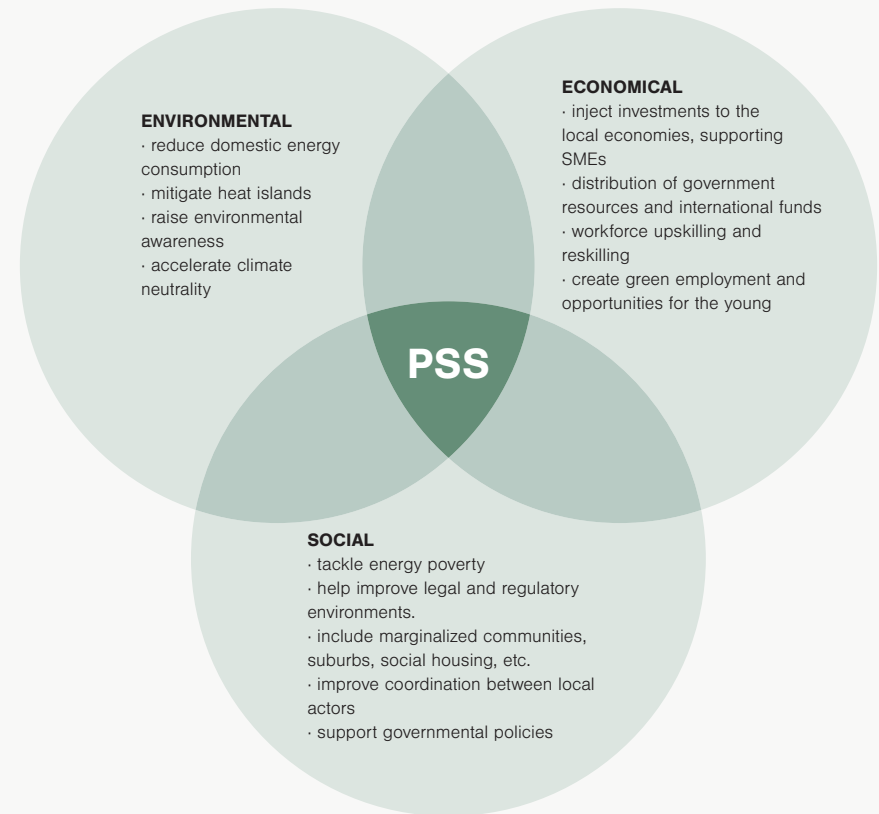
1.3 What We Envision

We envision a product-service that accelerates the Italian house system transition to greener, which will help Europe to achieve the goal of climate neutrality by 2050.

Our goal is to offer a system to deploy faster house energy efficiency, by offering an affordable solution to reduce the consumption of powered devices for domestic thermal comfort especially in hot areas.

This goal could be achieved by promoting information and general awareness, collaborating among authorities and companies at the local level, connecting all relevant actors in the value chain (construction companies, architects, engineers, urban planners, financiers, etc.).

Putting the focus on the wider benefits of renovation, not only environmental, but also economic and societal, will help achieve these goals.



We propose an **adaptable** solution for different local contexts. We understand that the intensification of energy poverty due to global warming is a problem that will affect most nations and we want to ensure that our innovation can assist diverse contexts around the globe.

We believe that **collaborating** with local agents and benefiting local systems has a great potential for replication. It must be **scalable** in order to impact communities beyond the individual sphere.

The new solution must be relevant both now and in the future. It should address **long-term** sustainability in order to ensure the energy sufficiency of future generations.

We believe that in order to significantly impact people's lives, they must be **empowered**, mostly through access to information, but not exclusively. We propose a new system that helps end users navigate difficult processes and access their rights.

Energy efficient house renovation for low impact thermal comfort.

When

Now and in the future.

Who

Householders and homeowners.
Condominiums, administrators, building sector
companies, public authorities and Non Governmental Organizations.

Where

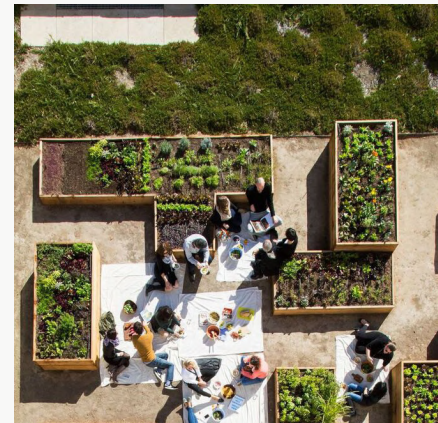
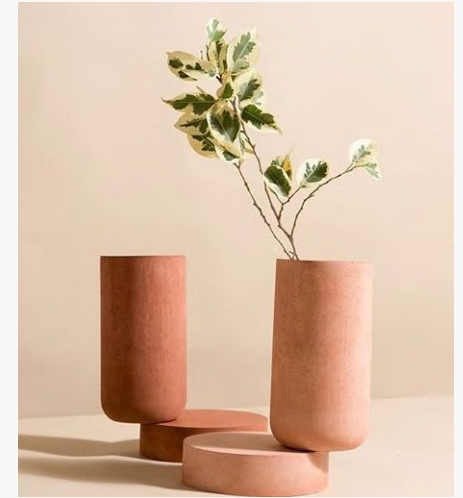
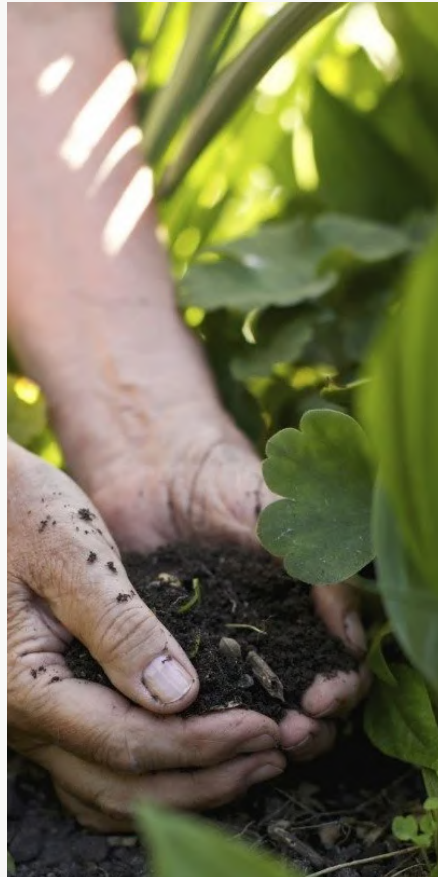
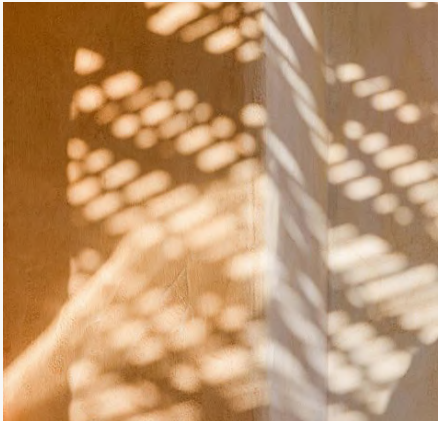
Residential and non residential
buildings, urban centers, hot regions from
temperate and tropical areas.

2

Product

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2.1 Moodboard



2.2 About Brease

An energy-saving, thermal insulating and modular panel system

Brease is a modular panel system designed to be adapted to the facades of houses. Brease, which acts as an insulation and shading panel after being positioned on the exterior of buildings, does not require any energy to operate and provides the thermal comfort of its users, especially in hot weather, without increasing their energy expenditure. The product, composed by clay bricks and galvanized steel structure, offers a long-term use thanks to its modular and easy-to-maintain components. The panels become a vertical garden over time with the help of plants that grow from the pots inside the bricks, thus contribute to the shading and cooling purpose.

Reference Building for Brease: "Palazzo di Cemento"

Architect: Giacomo Leone

Year: 1981

Location: Librino, Catania, Italy

Torre Leone, better known as the "concrete palace," is a symbol of the havoc and decay of southern Italy. It is a 14-story building started to built in 1981. The construction was halted due to a change in regulations and the building remained uninhabited until 1992 when it was squatted. Fortunately in 2011 the issue was cleared and Families now live there regularly.



Peculiarities

Modular

Consisting of modular bricks and metal rods, Brease can be attached to the walls of buildings and customized according to the architectural arrangement of the facades.

Insulating

Insulation is provided by the natural properties of the clay and the gaps in the bricks. These air gaps encourage the formation of natural ventilation (chimney effect) and slow down the heat exchange between spaces at different temperatures.

Shading

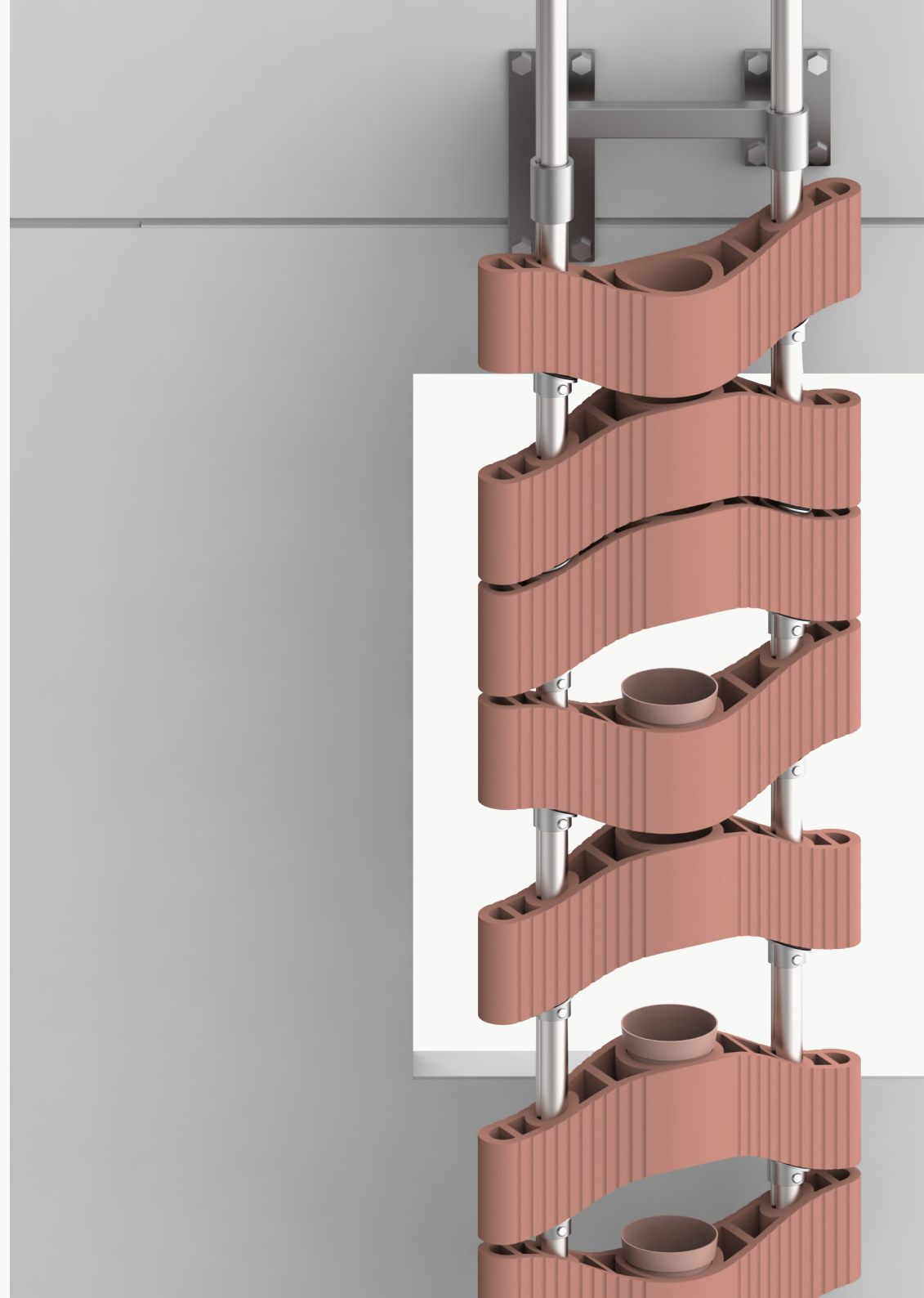
The angle of the modules can be adapted to the location of the building and the sunlight, as well as their special arrangement in front of the windows and balconies. It is taken into account that the sun shade protects the interiors from heating and at the same time provides sufficient light penetration. In addition, the ceramic modules hold pots where climbing plants are grown, thus helping to shade and increasing the humidity and quality of the air by transpiration from their leaves.

Low Impact

The material used in the manufacturing of the modules is clay, which is relatively low-impact and requires very little processing once extracted. Plus, waste clay bricks can be recycled into grain particle sizes and used as sand replacement in concrete, reintroducing waste products into the construction industrial chain. Furthermore, the metal structure made of steel is 100% recyclable and contribute to the circular economy.

Collective Benefits

Over time, the plants that cover the facade not only cool the air inside the house, but also the surrounding air, helping to reduce the heat island effect of the city, benefiting the neighborhood.



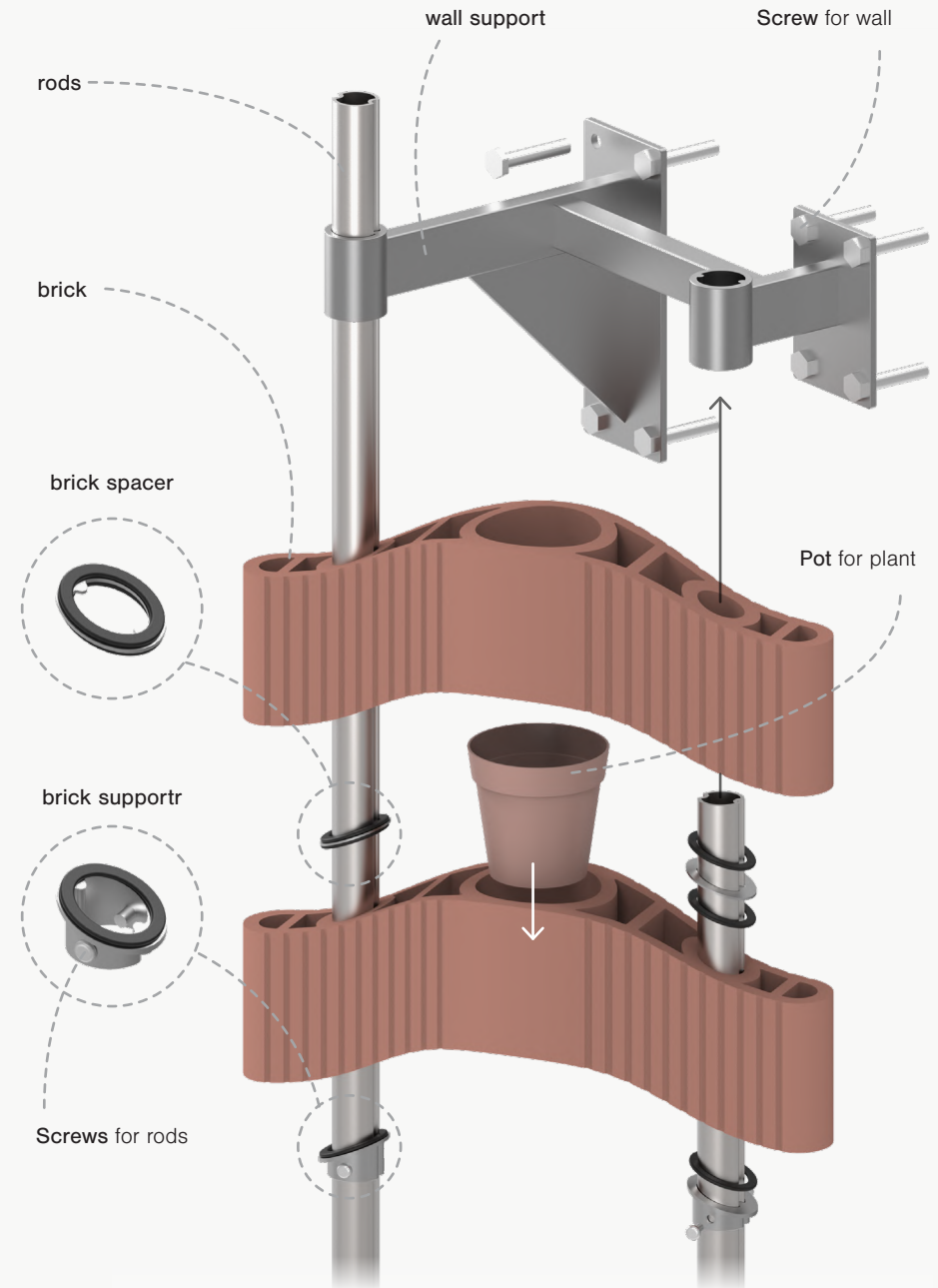
2.3 Structure

Assembly

The assembly of components is fast and uncomplicated and is designed to avoid errors. Everything is designed in such a way that as few parts as possible will be required, and in the event of a breakdown, each part can be replaced in a quick way. The assembly order is always the same, but the number and location of the components will vary, as the product is adaptable to different building facades.

Assembly Order

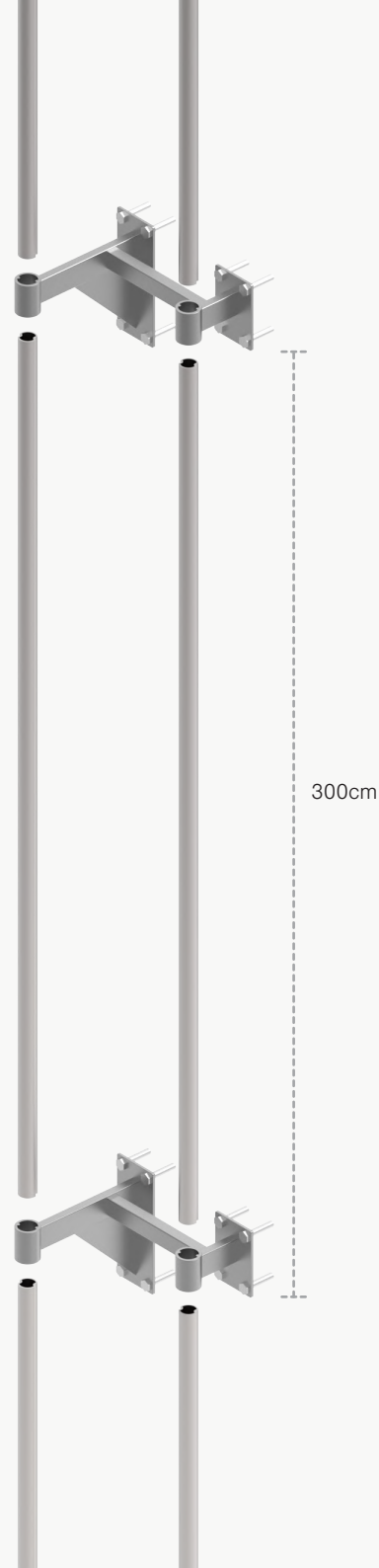
- 1 First, the bottom wall supporter is mounted on the wall and the metal rods are inserted into the appropriate gaps.
- 2 Afterwards, the bricks are passed to the metal rods one by one.
- 3 Metal brick supports are screwed between bricks to support them (one support can support maximum 3 bricks), thus preventing from moving on the metal bar. Between the two bricks, supportive rubber gap-creating rings are added.
- 4 After the assembly of the bricks is completed, the upper wall support is placed and fixed to the wall and the assembly is completed.



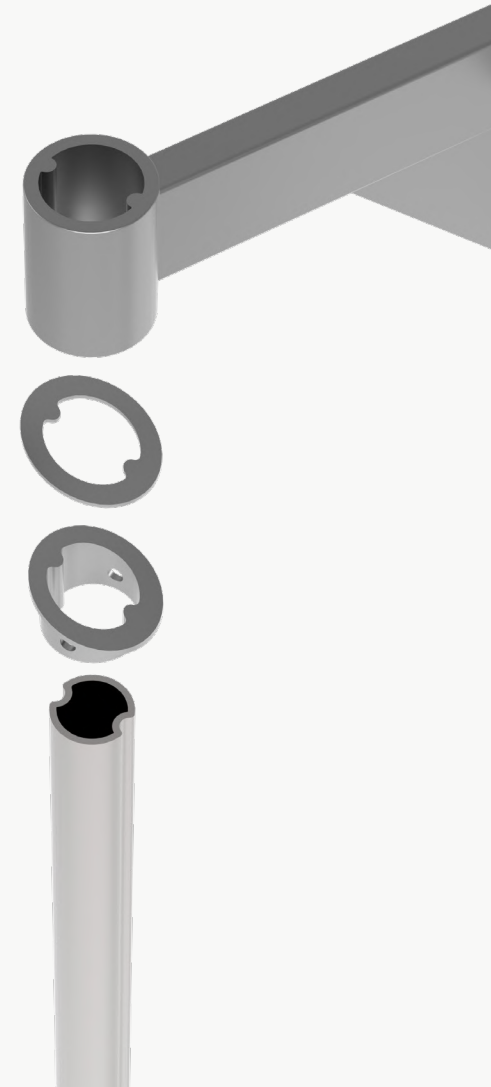
The Shape

The structure consists of standard metal rods with a length of 3 meters and fasteners. This guarantees that they can be applied to different windows and fixed directly and securely to the facade with screws. The tubes fit into the support piece by adjusting to the holes.

There are various reasons why metal tubes for each floor should be installed separately rather than using long metal pipes: First, the location of the panels on the facade may vary, so short rods provide logistical convenience and ease of installation, and finally, it simplifies product maintenance.



A closer look at the profile of the metal tubes reveals two vertical notches along the entire length of the pipe and the negative profile for this in the wall bracket. These notches help ensure precise alignment of all parts such as the brick support, brick spacer and rods. This is important so that the support has the same angle as the brick and the brick rests firmly and securely. The vertical threading also prevents the components from twisting horizontally.



Production

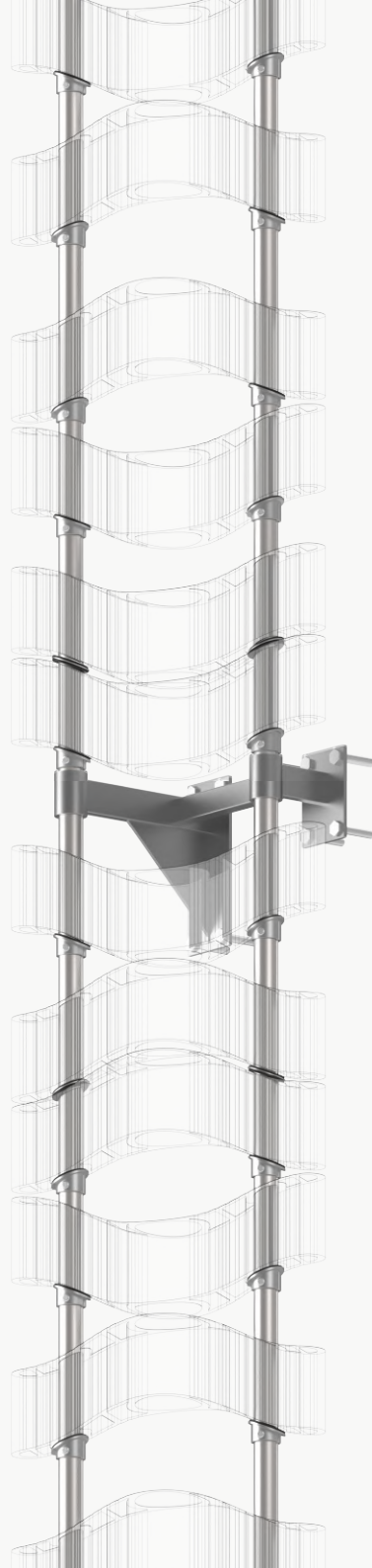
Galvanized Steel

The metal structure of Brease is galvanized steel: it is unique because, unlike regular steel, it is resistant to water and corrosion, thanks to its zinc coating. Its special composition helps to reduce the time and money spent on maintenance and repair.

Manufacturing

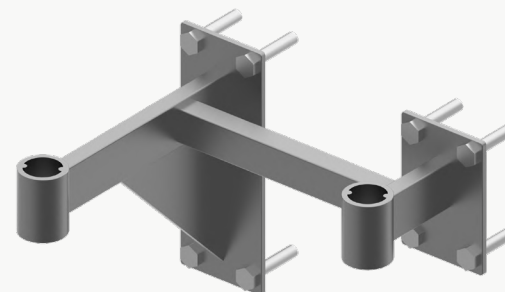
Using the hot-rolling process, a semi-finished solid product (slab/sheet) is transformed from tubes and bars, which are then drawn and made hollow with the desired thickness. Then, for cylindrical tubes, a second cold drawing stage will be carried out to create the two necessary notches. As we end up with long tubes at the end of this machining process, we will go through a slicing process to create elements of the correct length.

Welding will be required for the fasteners in the structure: this process, where multiple components are joined together by melting the contact points, eventually creates strong joints and can be wall-mounted.



Wall support element

Consisting of hollow metal bars welded together to create a single component designed to support large weights. Using screws, it is attached directly to the facade.



Brick spacer & support

The former is made by welding a cylindrical bar with a shaped plate, the latter only a shaped plate.

In both cases, the element is coupled with a rubber ring that serves as a seal so that the metal does not come into direct contact with the clay.



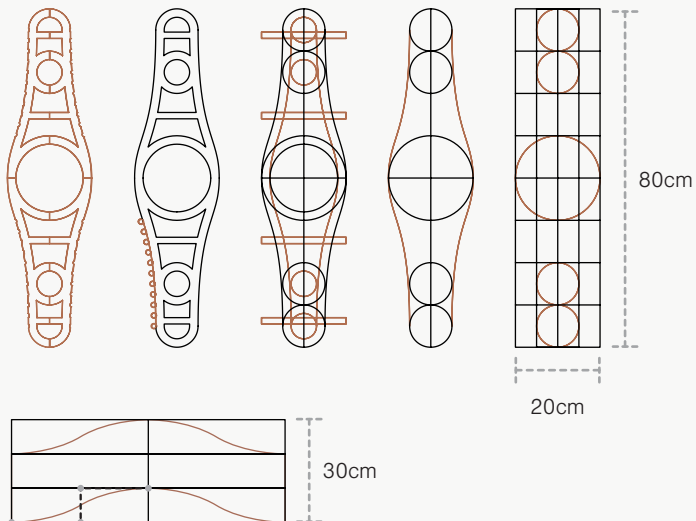
2.4 Brick

The Shape

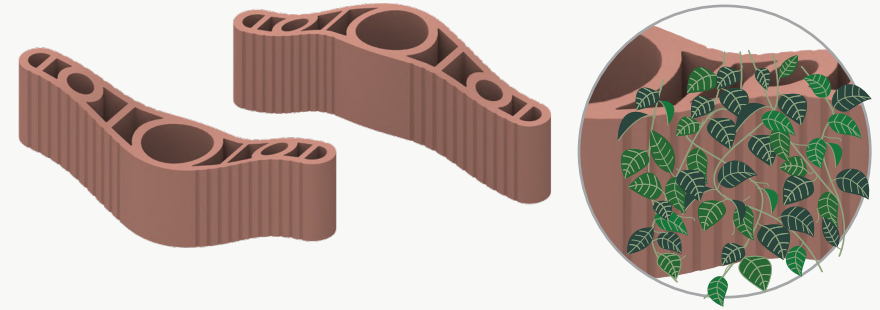
Designed by taking inspiration from the brick, Brease modules can be produced easily by extrusion method and shaped in such a way that the functionality is at the maximum level. The modules will not only help to ensure air flow, but also make the installation process easier.

A round space where pots can be placed has been created in the middle. The round spaces located on the two sides fit the metal pipes.

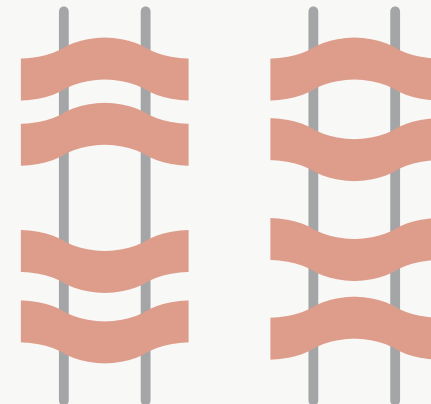
Modules can be placed on the structure at different intervals and with different orientations according to the desired distances and the necessities of the building.



The low relief texture on the outer surface is designed to prepare the path for the growth of climbing plants by attaching to the brick surface.

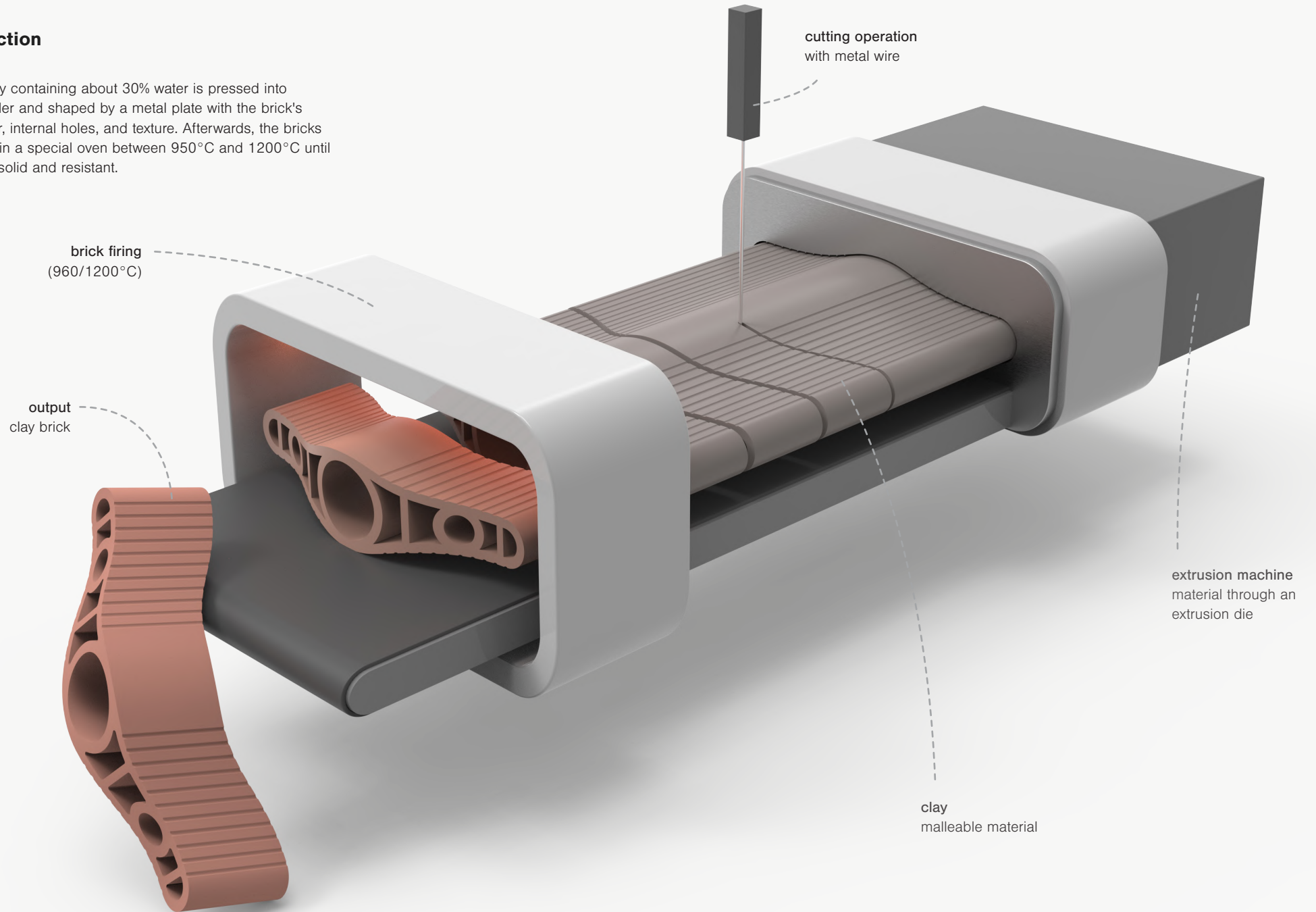


The shape of the brick allows to create ever-changing compositions by arranging them to one side or the other. Thus, the necessary space for placing the flower pots is created, the viewing angle is widened and it provides a flexible use.



Production

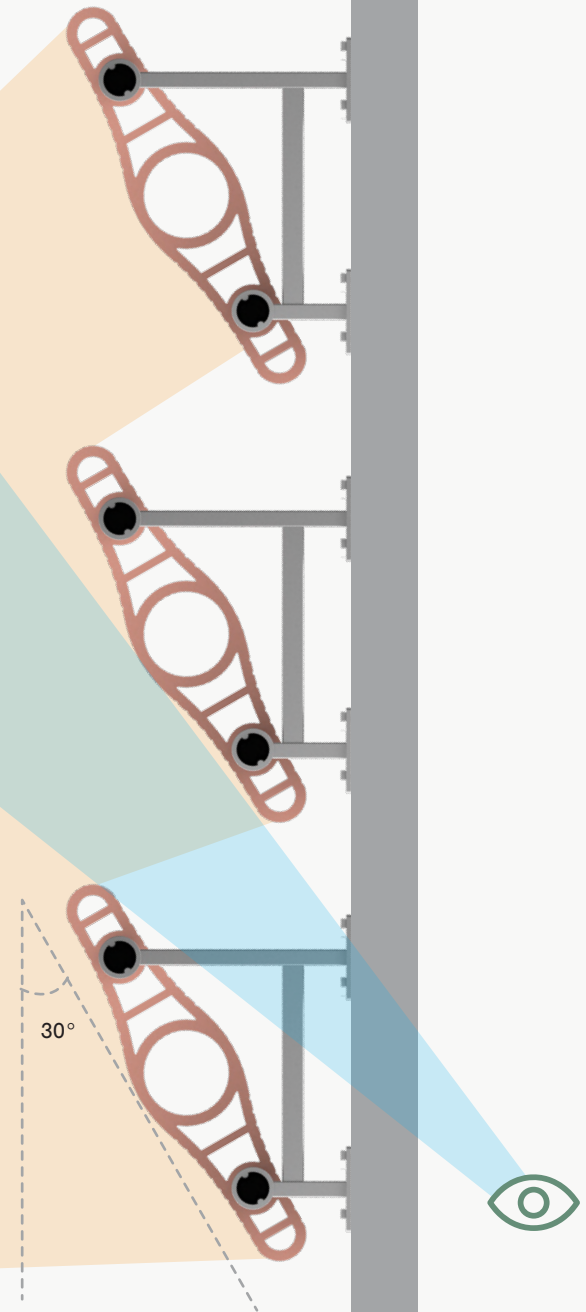
Moist clay containing about 30% water is pressed into an extruder and shaped by a metal plate with the brick's perimeter, internal holes, and texture. Afterwards, the bricks are fired in a special oven between 950°C and 1200°C until they are solid and resistant.



2.5 Shading Effect

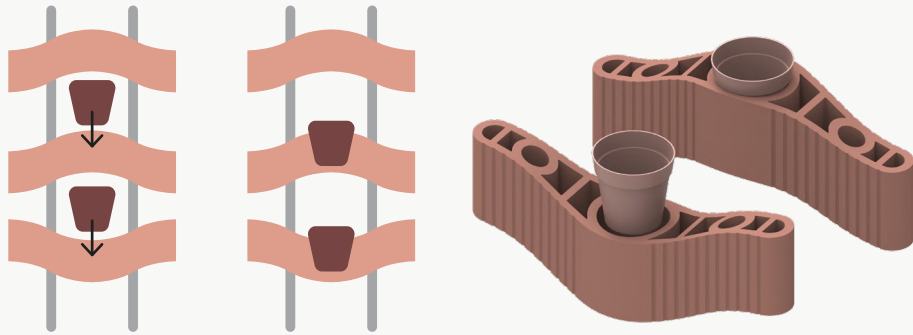
The structure allows the bricks to be placed by turning 30° with respect to the facade. This solution has a dual function:

- It shields sunlight more effectively. The rotation of the bricks is designed according to the main points and the path of the sun during the day. Therefore, the bricks will be installed in the southwest direction.
- It allows the user to maintain good visibility and enjoy good illumination with indirect natural light.

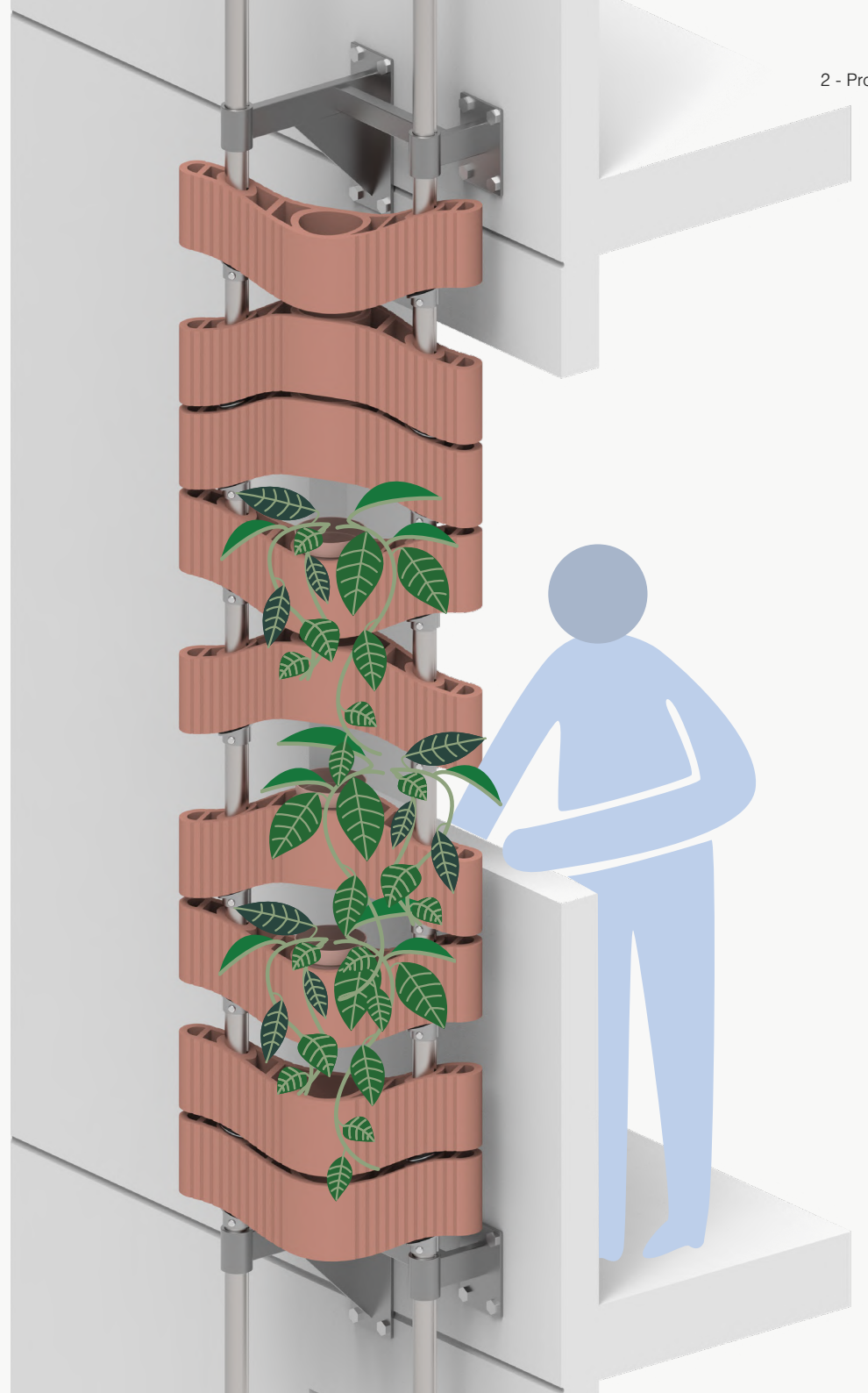
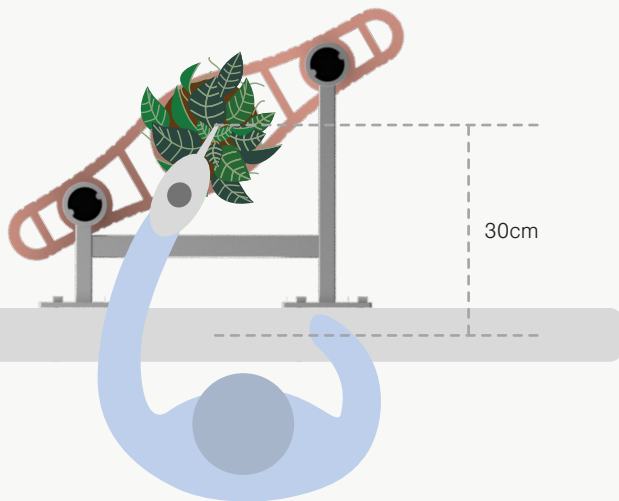


2.6 User Interaction

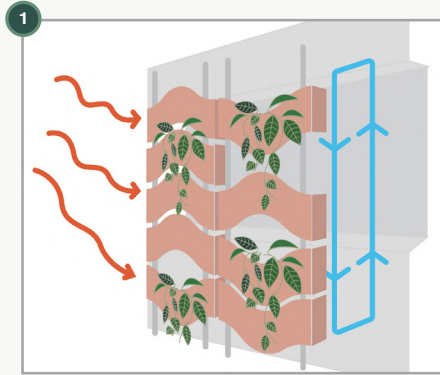
The plants on the panels, which grows escalating the modules and form a vertical green garden, are the point where the users will interact with the product. Pots are easily inserted through the large hole in the middle of the brick. The bricks are designed in such a way that the plant pots can be easily attached and removed.



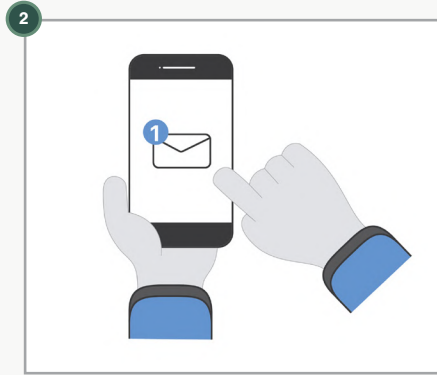
The user can easily care for the plants from the balcony/window.



2.7 Storyboard



1 It is a hot summer day. Thanks to Brease, Francesco's building is well insulated and protected from the heat.



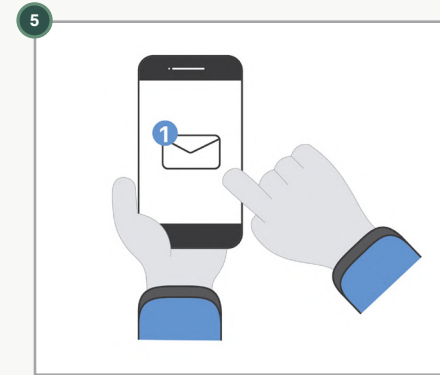
2 Francesco, the house owner, receives an email reminding him to water the plants of the Brease green facade.



3 While watering the plants he notices a crack in one of the modules.



4 He checks the label on the metal structure telling "scan QR-code for support". Inside the User Portal he can book a visit from a technician.



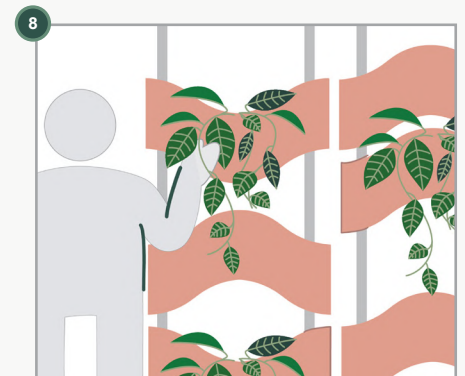
5 On the same day he receives an email with a confirmation of the on-site maintenance.



6 Technicians arrive for the visit with a tool kit and new modules. They disassemble the part of the Brease structure in front of his window.



7 They reassemble the structure with the new brick and finish the maintenance.

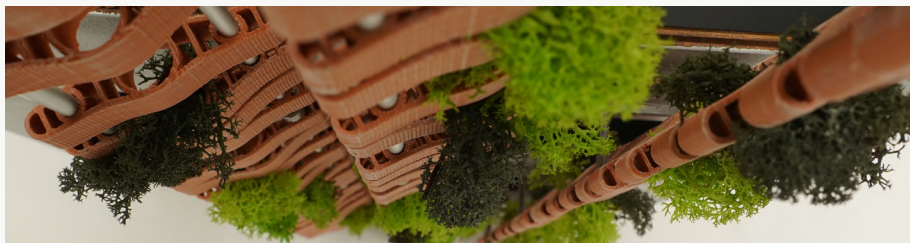
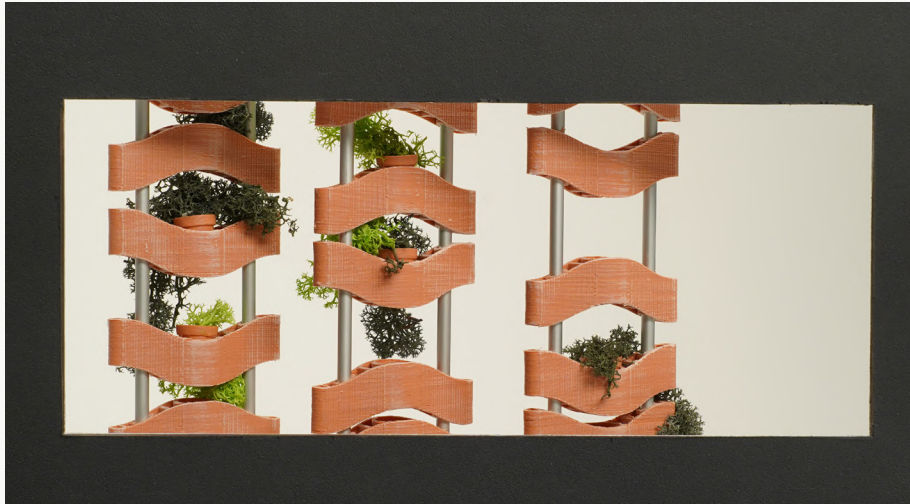


8 Francesco is happy that the brick got repaired quickly and free of charges. He keeps taking care of the plants and monitors scheduled maintenance in his apartment.

2.8 Prototype



Scale: 1/10



3

Service

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3.1 Overview

Brease offers both **business-to-business** and **business-to-consumer** services.



B2B

Condominiums, Building Sector Companies,
Public Authorities and Organizations

Brease offers facade renovation in multi-family residential and non-residential buildings. By acquiring our PSS, old buildings can transform into green buildings and improve their energy efficiency.

Our company diagnoses the energy efficiency of buildings, designs adaptable vertical greenery shading systems and monitors the installation by third party partners.

Brease evaluates the internal lighting of the units and offers a lighting design service. The condominium can choose to buy the execution of the lighting project or just receive the technical report.

After the installation, Brease does preventive maintenance and provides technical support. It analyzes the impact of renovations and monitors indicators.

It also manages projects and gives consultancy in green renovations for companies, NGOs and institutions from the private and public sector. Moreover, Brease provides employee training for companies in the construction and real estate sector.



B2C

Residents and Home Owners

Brease offers an effortless and quick installation of its solutions through selected local partners. Our main goal is to delight the end-user and develop trust by providing high quality customer care in every stage of the service.

Residents of renovated buildings enroll on the PSS onboarding process through our web platform. There they receive training and information on how to care for the plants and interact with the system after installation.

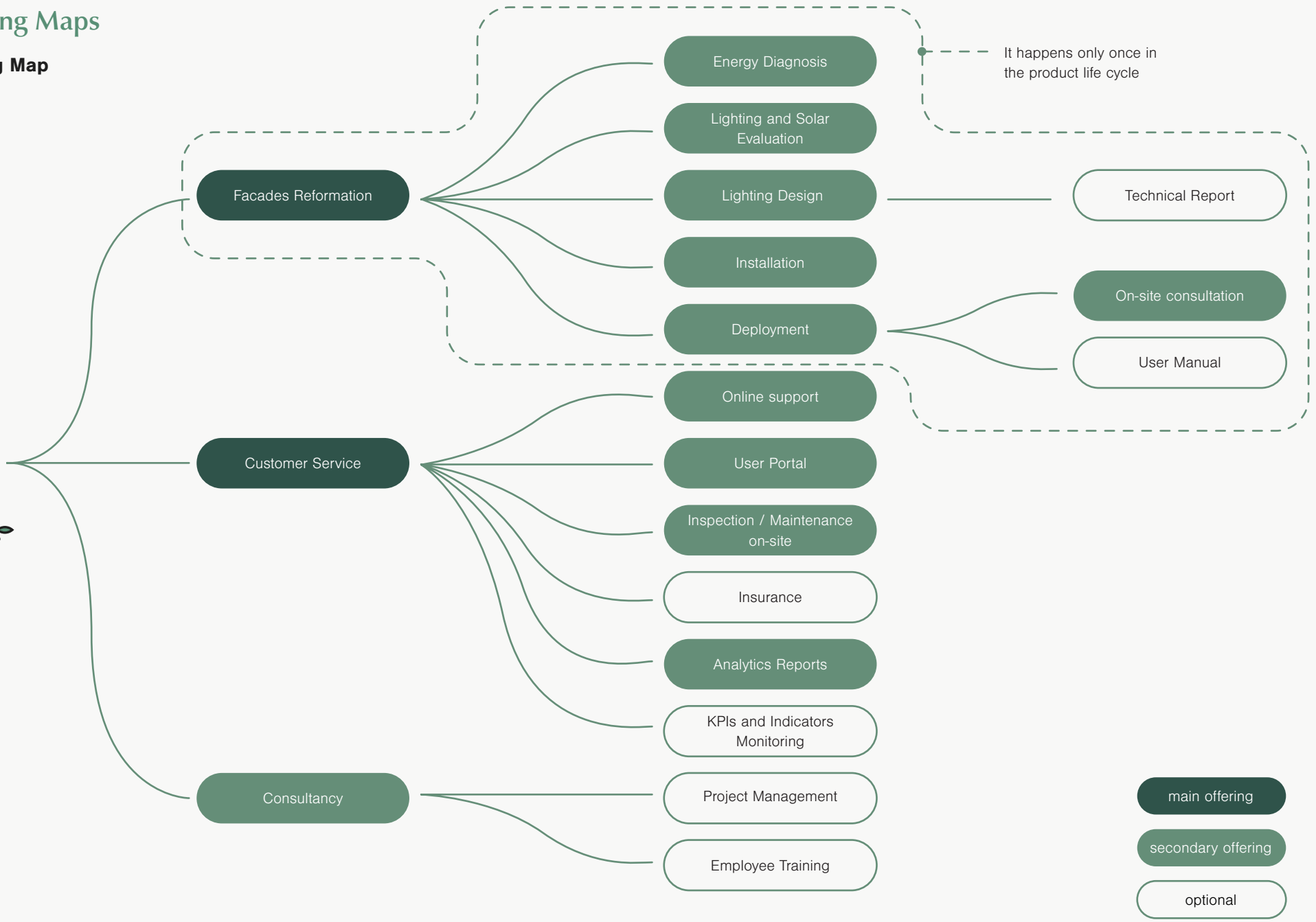
Brease tracks the improvement of the building's energy efficiency before and after the installation and provides the householders with information about their energy savings monthly.

The business offers on-site technical support and preventive maintenance to householders and home owners.

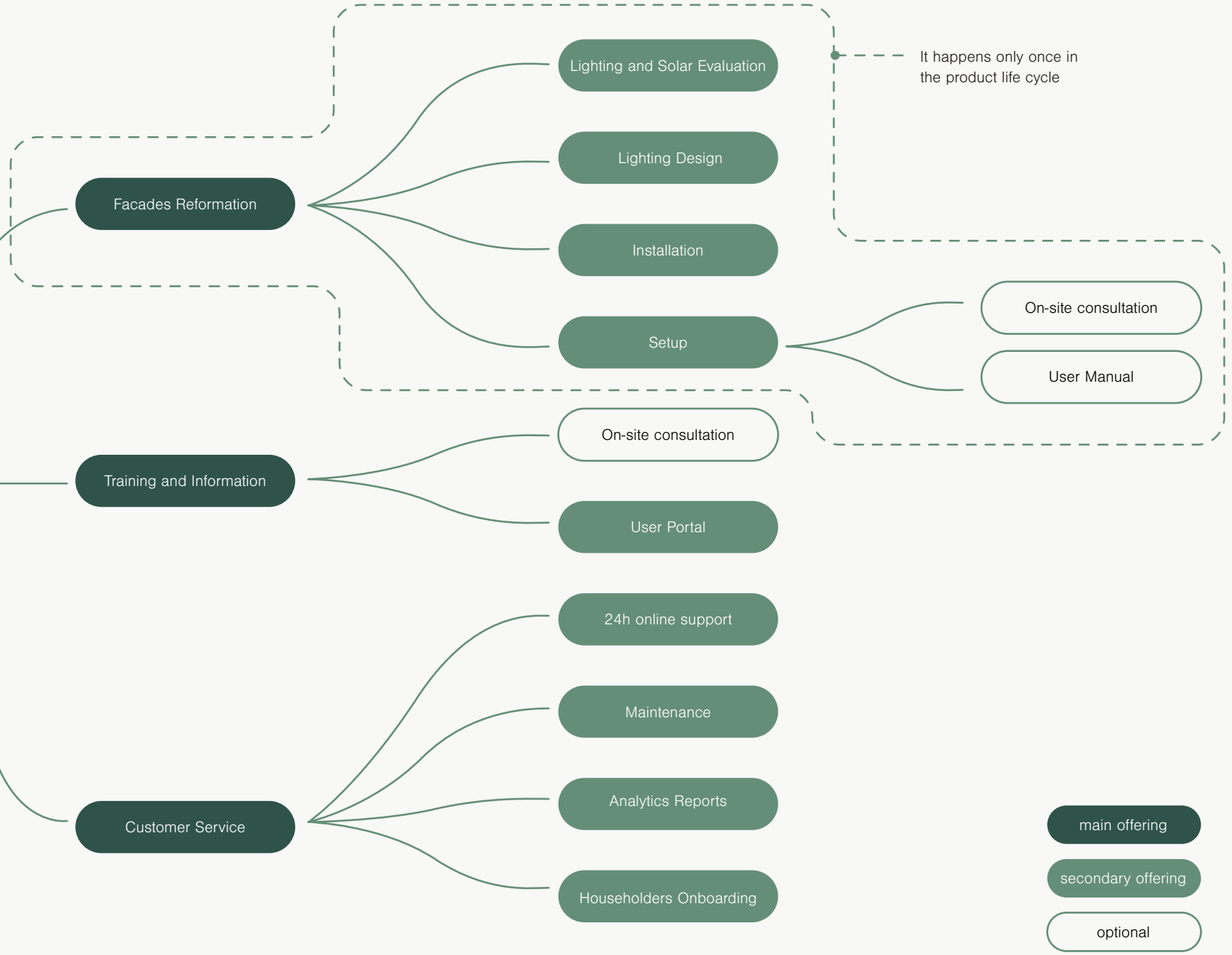
Brease also provides information and technical support through its digital channels.

3.2 Offering Maps

B2B Offering Map



B2C Offering Map



3.3 Stakeholder Maps

Internal Stakeholders

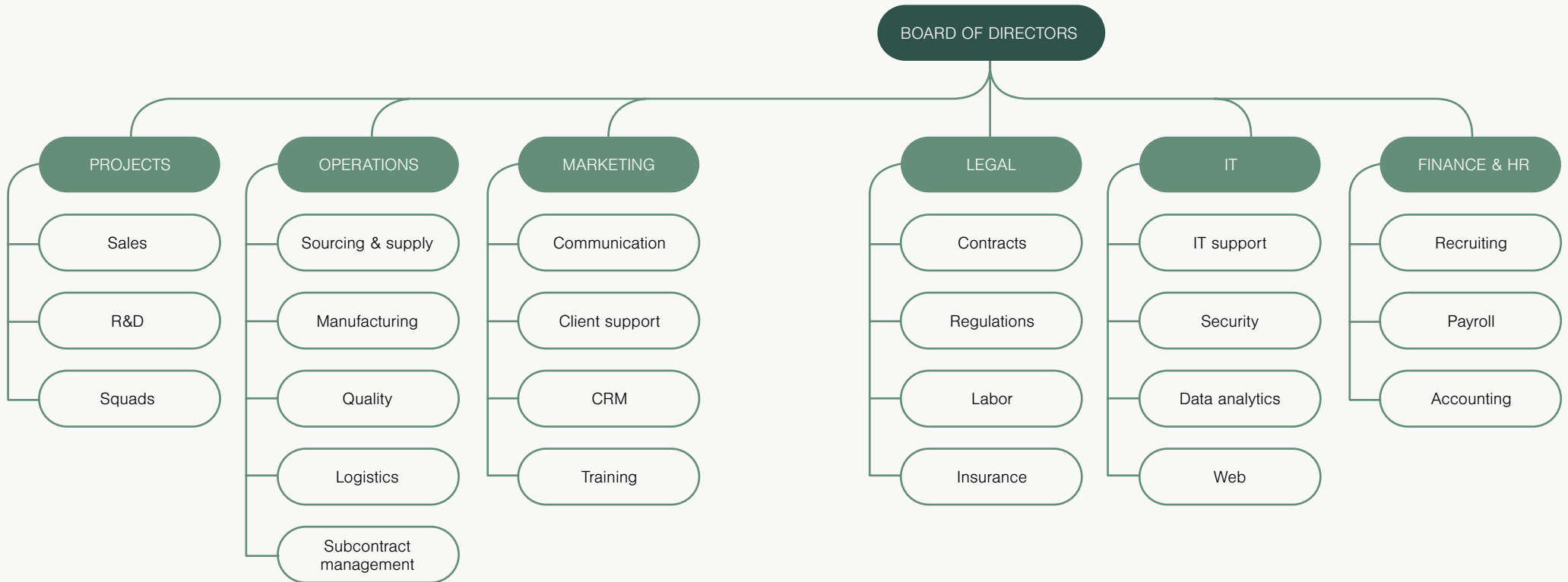
Brease has internal stakeholders made up of different managers and teams operating under the board of directors.

Highly skilled experts work in collaboration with the key partners to deliver tailor-made projects, deal with legal and regulatory environments, and provide end-to-end solutions to our customers.

The projects department is the company's think tank, which works closely with the operation and handles all phases of projects from start to finish. The squads are made of project managers, engineers, architects, interior and product designers, which work specifically for each customer and deliver tailor-made projects.

MANAGERS

TEAMS



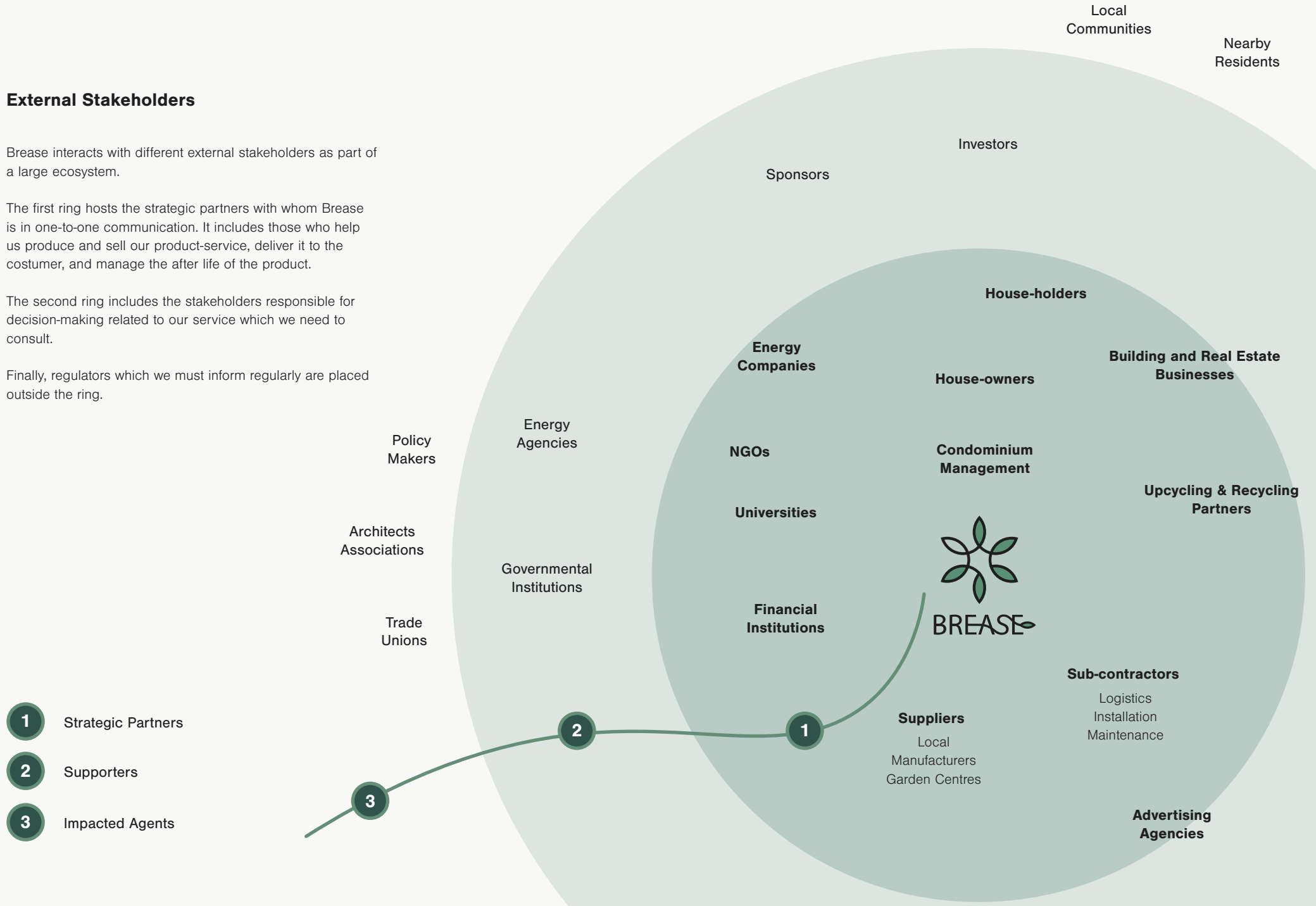
External Stakeholders

Brease interacts with different external stakeholders as part of a large ecosystem.

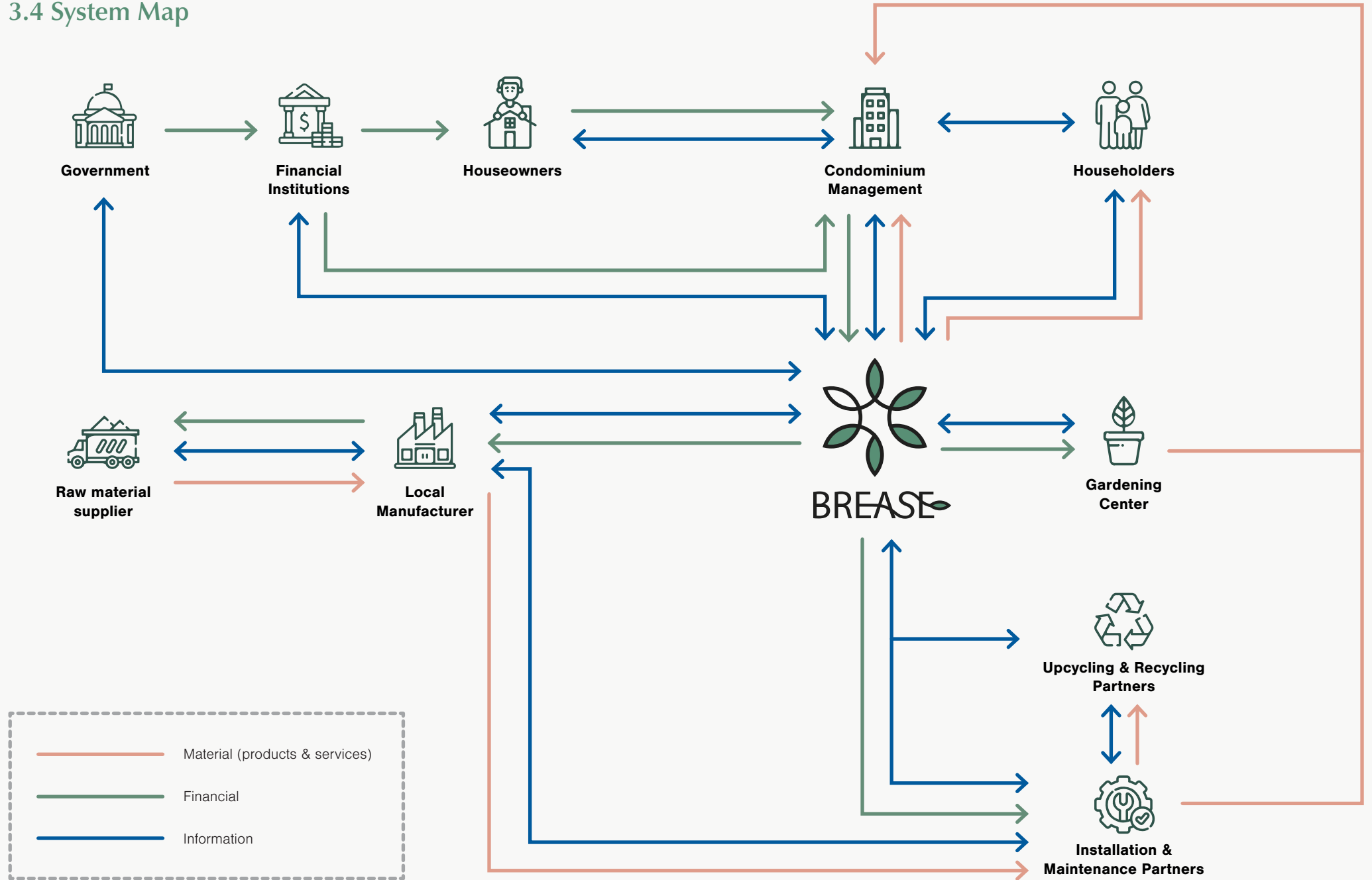
The first ring hosts the strategic partners with whom Brease is in one-to-one communication. It includes those who help us produce and sell our product-service, deliver it to the customer, and manage the after life of the product.

The second ring includes the stakeholders responsible for decision-making related to our service which we need to consult.

Finally, regulators which we must inform regularly are placed outside the ring.



3.4 System Map



3.5 Business Model

What are Brease's differentials?

Easy-Breezy

The practicality of our solution integrates the product and the service. Brease invests in agile processes, good customer care and clear communication. Our team of experts is able to navigate the turbulent sea of bureaucracy and simplify processes. Our product is made entirely from prefabricated components, and our logistics partners ensure a spotless and rapid installation.

Adaptability

Brease's technical and organizational solutions are highly adaptable to local contexts. The business strength is integration of services through dedicated operators thanks to an improved coordination with local actors. It also is highly adaptable to "complex buildings" such as rented housing and social housing.

Scalability

Brease has the capacity to address public and private initiatives and is able to operate on large scales to serve building complexes and greater areas. The company communicates results to raise awareness and support the replication and expansion across and outside Italy.

Mission

Make energy efficient homes affordable, practical and easy to understand. Empower people and communities. Impact the lives of families and transform buildings, condominiums, neighborhoods, districts and cities.

Vision

Mitigate energy poverty, evolving for climate and scalable futures. Accelerate the transition to green cities and help the achievement of climate neutrality.

Values

Energy equality as social responsibility. Promote economic prosperity by making local investments and creating green jobs. Transparency and trust in processes and information flows by coordinated collaboration and cooperation with stakeholders.

Business model

KEY PARTNERS

- **Local ceramic and metal suppliers:** manufacturing
- **Gardening centers:** plants supply
- **SMEs of the building sector:** workforce for installation and on-site maintenance
- **Real estate and architect business:** customer acquisition
- **Universities:** Innovation, research and testing
- **Governments:** State subsidies, public procurement, regulations
- **Financial institutions:** money flow
- **Energy Agencies and ESCOs:** regulations and data sharing
- **NGOs:** awareness, facilitate funding access, integrate to local/regional initiatives
- **Upcycling and recycling partners:** support the maintenance, waste collection and disposal
- **Advertising Agencies:** campaigns

KEY ACTIVITIES

- Customer acquisition
- Marketing & Communication
- Supply chain management & Quality Control
- Renovation Projects
- Legal & Regulatory issues
- Installation & Setup
- Customer Support
- Dedicated Maintenance
- Digital infrastructure management

KEY RESOURCES

- High skilled staff: Architects, Designers, Engineers, Sales People, Data Analysts and Legal Consultants.
- Customer service: Internal team.
- Flexible supply chain, transportation and logistics.
- Strong and trustworthy partnerships with local actors.
- Company headquarter and strategically located offices.

VALUE PROPOSITION

BREASE ensures affordability and easiness for energy-efficient home renovation by transforming buildings and empowering people.

It reduces complexity and simplify decision making for homeowners in order to stimulate demand for building renovation and energy performance improvements to benefit people and their communities.

CUSTOMER SEGMENTS

- Condominiums
- Building owners
- Building Administrators
- Corporations
- Public Administrators

CHANNELS

- Social Media (awareness)
- Phone (sales and support)
- Whatsapp (sales and support via chat bot)
- E-mail (sales and analytics report)
- Web site (sales, information, support via chat bot, User Portal and analytics)
- User Manual (optional, printed by request)
- Office (for meetings with clients and suppliers)
- Catalog (awareness)

CUSTOMER RELATIONS

- Legal assistance
- Information & Training
- Installation assistance
- Dedicated maintenance
- Online support
- Phone support

REVENUE STREAMS

- Facades Reformation
- Energy Efficiency Diagnosis
- Consultancy
- Project Management
- Employee training

COST STRUCTURE

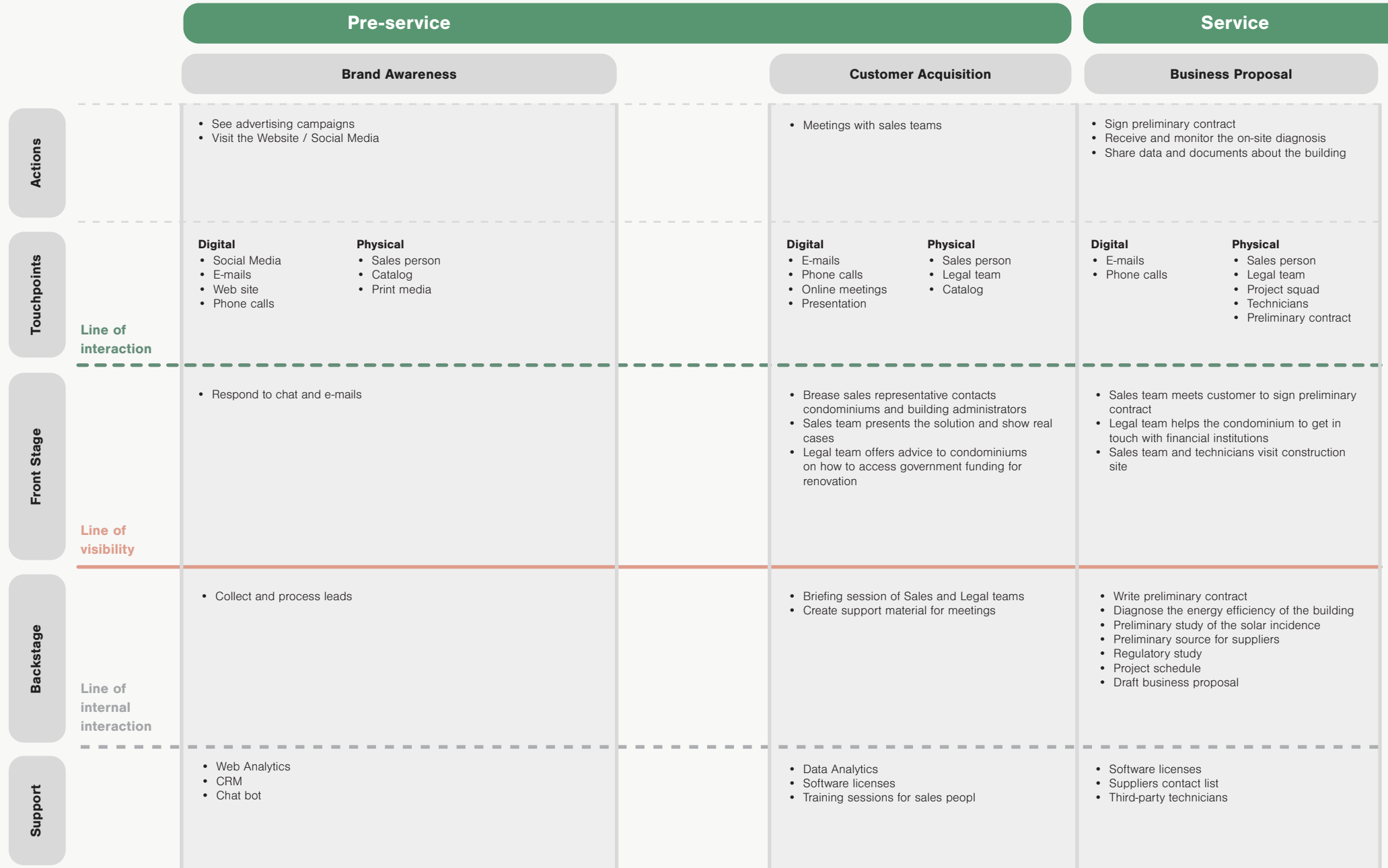
Variable Costs

- Manufacturing
- Logistic
- Reverse logistic
- Third-party installation workforce
- Third-party maintenance workforce
- Sales commissions

Fixed Costs

- Salaries
- Software licenses
- Digital Security and Maintenance
- Physical infrastructure
- Marketing
- Taxes

3.6 Service Blueprint



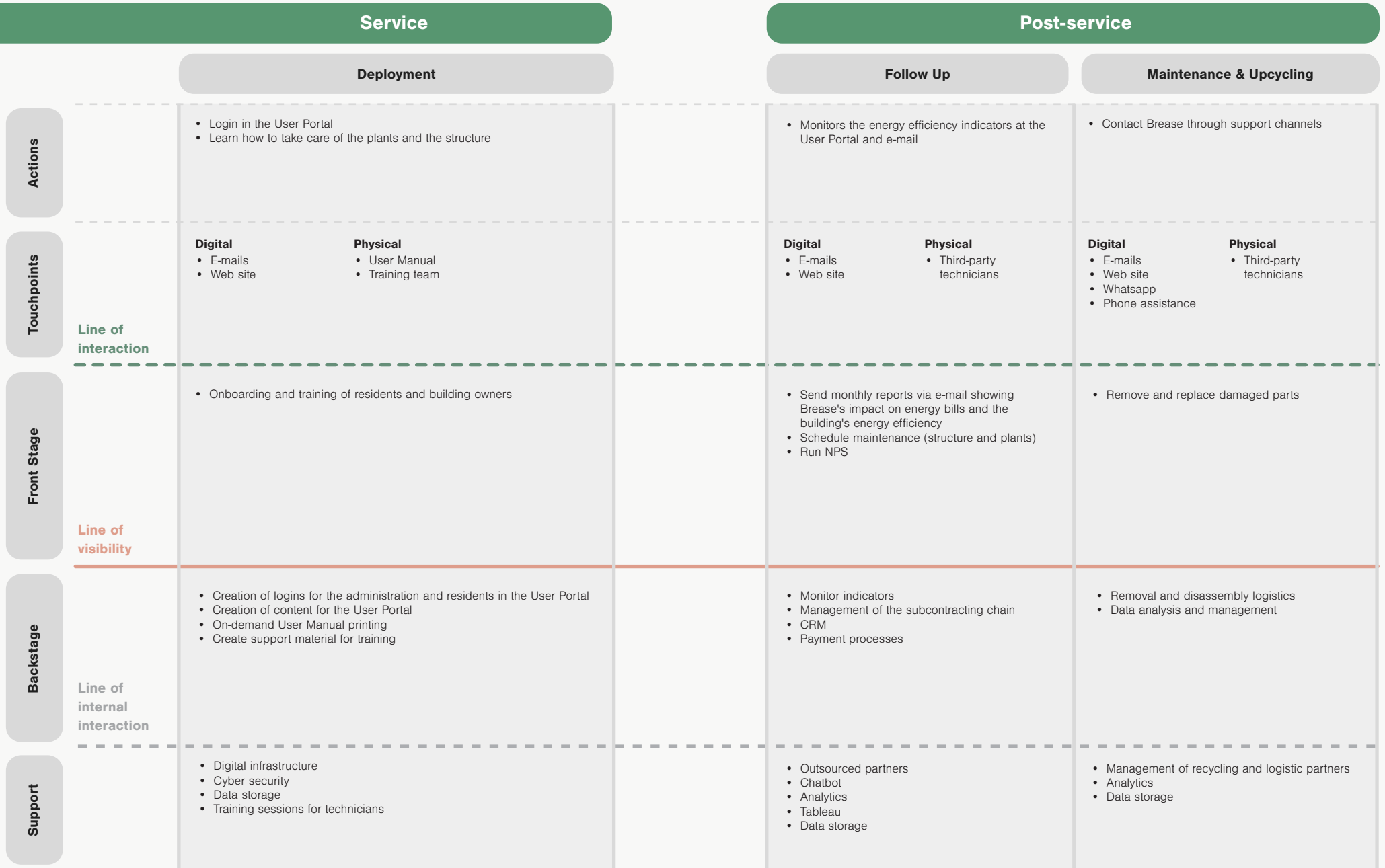
Service

	Contract	Project	Installation
Actions	<ul style="list-style-type: none"> Negotiate Submit financial evidence Sign contract 	<ul style="list-style-type: none"> Accompany the visit of the responsible technicians and architects Guide residents about technical visits to house units 	<ul style="list-style-type: none"> Receive installation teams
Touchpoints	<p>Digital</p> <ul style="list-style-type: none"> E-mails Phone calls <p>Physical</p> <ul style="list-style-type: none"> Sales person Legal team Office Business proposal Contract 	<p>Digital</p> <ul style="list-style-type: none"> E-mails Phone calls <p>Physical</p> <ul style="list-style-type: none"> Sales person Project team 	<p>Digital</p> <ul style="list-style-type: none"> E-mails Phone calls Customer service <p>Physical</p> <ul style="list-style-type: none"> Sales person Third-party teams Project team
Front Stage	<ul style="list-style-type: none"> Sales team meets customer to present final business proposal Negotiation rounds Legal and sales teams meet client to sign contract Support from the legal team to access government grants 	<ul style="list-style-type: none"> Laser scanning of the building Schedule visits to the apartments Diagnosis of the internal lighting Reply emails and calls 	<ul style="list-style-type: none"> On-site installation of the structure, the modules and plants Execution of the lighting design project/Deliver of the technical report Project team and technicians accompany the work
Backstage	<ul style="list-style-type: none"> Legal department performs customer credit analysis Get permission for installation from the local authorities 	<ul style="list-style-type: none"> Generate point cloud and 3D mapping Facade and interior lighting design Botanic study Manufacture of ceramic modules Quality control Acquisition of metal components Hire the third-party teams for installation Logistic planning 	<ul style="list-style-type: none"> Receiving and inspecting goods Goods invoicing Logistics Outsourced contracts
Support	<ul style="list-style-type: none"> Legal consultancy 	<ul style="list-style-type: none"> Software license Drone rental Data processing Plant catalogs Third-party technicians 	<ul style="list-style-type: none"> Partners teams Payment of fees

Line of interaction

Line of visibility

Line of internal interaction



End Users

The target **end users** of Breeze are all **householders** who will be interacting with our product-service.

Who are they?

The end users of Breeze are the residents of the renovated buildings, in addition to the owners of these residences, who will acquire the PSS through the condominiums of which they are members.

Specifically in Italy, most owners are seniors, but that doesn't mean that Breeze will only reach this target audience. Breeze can serve complex buildings, those where different family groups reside, including those that rent apartments in urban areas. Breeze is therefore a solution for everyone.

How will Breeze impact their lives?

Breeze guarantees a quick and efficient installation that minimizes inconveniences in the resident's routine.

In addition to the basic benefit of cooling their homes and lowering their energy bills, the modular Breeze green shading facade mounted in front of the apartment's balcony or window offers an experience based on caring.

Users interact with Breeze by taking care of the climbing plants that grow in the pots inside the ceramic modules. In addition, the company offers end-user maintenance services.

Breeze gives support and information to apartment residents and homeowners so that they know and trust the service and become true ambassadors of a more sustainable lifestyle. Our company measures the positive impact on the energy expenditure of the building and keeps the householders informed about their savings.



3.7 Persona



Name: Francesco, the home owner

Age: 68

Occupation: Sales agent

Lives in: Napoles

"The increases in bill costs have frightened us, and for this reason we want to be more attentive to consumption. I believe that for the period we are living in, it is important to do something."

Bio

Francesco lives with his wife in a condominium building from the beginning of the 20th century. His apartment receives constant sunlight because it is on the top floor, and it is excessively hot during the summer, which causes their electricity bill to rise due to frequent air conditioning consumption.

He used a funding aid to install solar panels with 50% discount and recently replaced his washing machine with a more efficient one. He considers saving energy more than an opportunity to save money, but also a moral duty to the planet.

He has had negative experiences with reformation corporations in the past and finds the regulations difficult to understand. In addition, any reform he considers doing needs to be approved by the condominium, which makes the decision-making even more complex.

Needs

- Reduce his energy bills
- Cool his house during hot seasons
- Improve the energy efficiency of his property
- An effortless solution

Wants

- Invest in property improvements
- Learn about energy management
- Do a responsive act for the planet
- Make good decisions

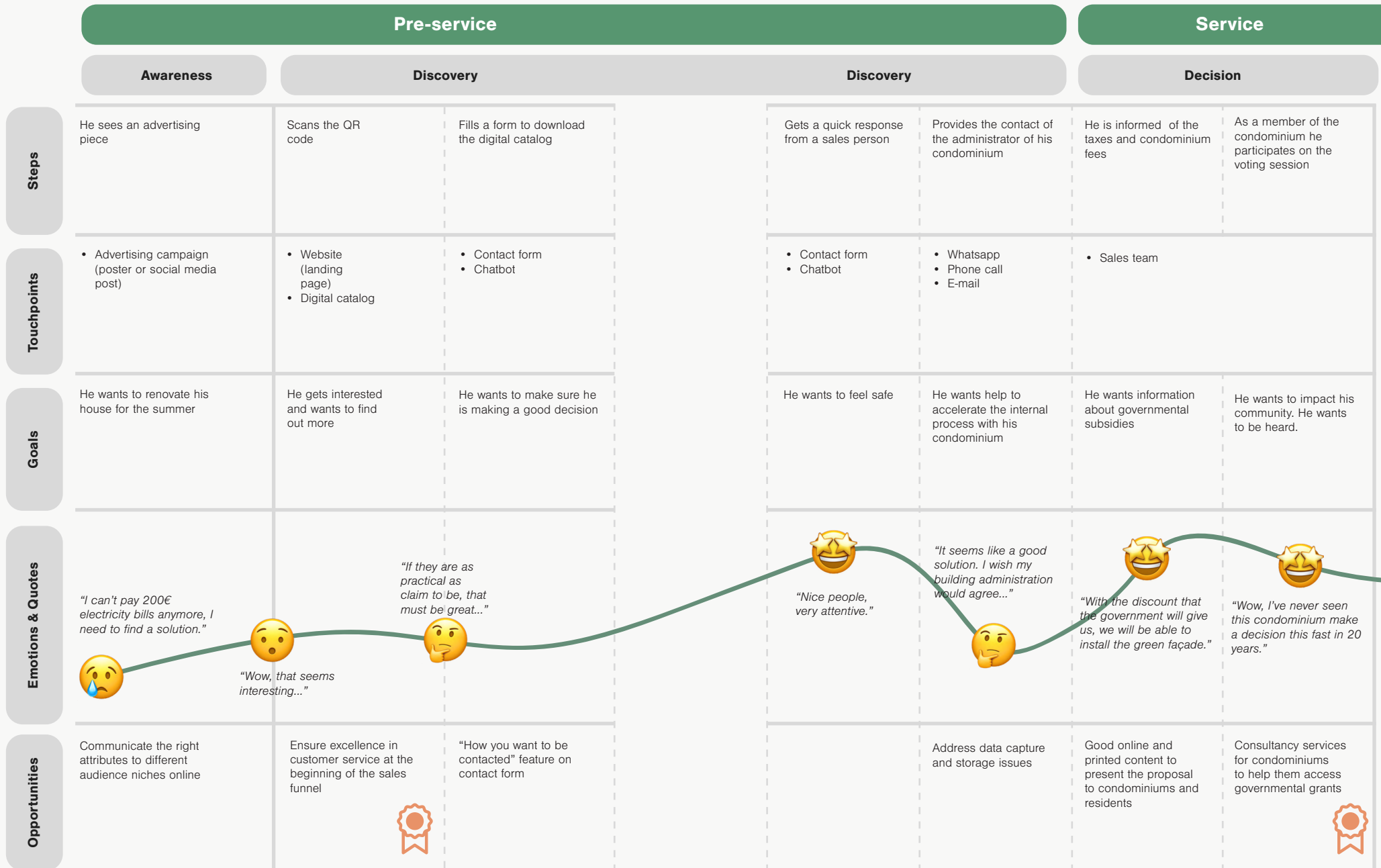
Painpoints

- Condominium approval
- Negative experiences with other companies
- Delays in delivery and installation
- Complex paperwork
- He is afraid of being a victim of fraud

Dimensions











3.8 Experience Map













Service

Project

Installation

	Project			Installation				
Steps	He is informed that the Brease team will be visiting his apartment	Receives the Brease team in his house	Makes a preliminary registration by providing his personal data	Informs his installation number from his energy supplier	Signs a term of consent	Receives an email and a Whatsapp message about the installation procedures	On the installation period he closes the windows and works from another room	
Touchpoints	<ul style="list-style-type: none"> Whatsapp Phone call E-mai 	<ul style="list-style-type: none"> Sales team Project team 	<ul style="list-style-type: none"> Form Project team Legal team 	<ul style="list-style-type: none"> Form Project team Legal team 	<ul style="list-style-type: none"> Term Legal team 	<ul style="list-style-type: none"> Whatsapp E-mail 	<ul style="list-style-type: none"> Whatsapp E-mail 3rd-party technicians 	
Goals	He wants to know installation details and to make sure the work will be completed on time.		He needs to be sure that he is not at risk of fraud.	He needs to feel safe.	He doesn't want to worry about paperwork.	Ensure that his routine will not be disrupted by the installation.	He wants to avoid dirt, dust and loss of privacy inside his apartment.	
Emotions & Quotes	<p>"Wow, that was quick. It is really going to happen."</p> 	<p>"I've been living in this apartment for the last 20 years. My wife and I moved here..."</p> 	<p>"Is all that really necessary?"</p> 	<p>"Hmmm ok, now I see."</p> 	<p>"At least I didn't have to leave my house."</p> 	<p>"Already? Great!"</p> 	<p>"I hope they don't make a mess in my balcony."</p> 	<p>"Are they gone already?"</p> 
Opportunities	The messages must be clear and reach the householder through various channels	Ensure excellence in customer service during the apartment diagnosis to gain the householders' trust		Prepare good support material for the visit.	Involve the legal team.	Add a telephone number and a CTA button to redirect to Whatsapp for questions about the installation	Send a "Frequent Questions" mail	



Service			Post-service				
Installation		Deployment		Support			
Steps	Welcomes the team that visits his house to install the new lighting	Receives an onboarding invitation	Signs up to the User Portal	Checks the User Manual and watch online content on the web platform	Receives e-mail with analytics	Receives e-mail informing the next on-site checkup	Welcomes the technician in his house for inspection
Touchpoints	<ul style="list-style-type: none"> • 3rd-party technicians 	<ul style="list-style-type: none"> • Whatsapp • E-mail 	<ul style="list-style-type: none"> • Website • Whatsapp • E-mail 	<ul style="list-style-type: none"> • Website 	<ul style="list-style-type: none"> • E-mail • Website 	<ul style="list-style-type: none"> • E-mail • Website 	<ul style="list-style-type: none"> • 3rd-party technicians
Goals	Ensure he won't spend more on energy to light his house to compensate the shading system	Effortless processes and human support		He wants information on how to use the product and how to proceed in case he has any problem	He wants to feel that he helped making some positive impact	He wants to be taken care of	He wants to know if there's a problem with the product
Emotions & Quotes	<p>"Can I see it working?"</p>   <p>"Good! I can work in this lightning"</p> <p>"What is this?"</p> 	<p>"Ah, ok, very easy... that's why they asked for my information".</p> 		 <p>"Look, videos, advice... I wish I could share this info with my son, he will like this stuff".</p>	 <p>"In one month the building saved €500 in energy bills!! Wow, with that money we could change the hall carpet".</p>	 <p>"They are so attentive".</p>	 <p>"Is it damaged? Oh no! What about now?".</p>
Opportunities	Train and inspect the installation partner teams	Offer support via telephone. "Click here if you need help from our team to access the portal"		Create shareable and free-access content	Show the impact of Brease both in terms of energy expenditures, money savings and social impact	Send a "Frequent Questions" mail	
							

Post-service

Support

Feedback

Steps	Receives a message informing the schedule for the replacements of damaged pieces	Welcomes the technician in his house for maintenance	He receives an NPS form for evaluation of maintenance
Touchpoints	<ul style="list-style-type: none"> • Whatsapp • E-mail • Website 	<ul style="list-style-type: none"> • 3rd-party technicians 	<ul style="list-style-type: none"> • Whatsapp • E-mail • NPS form
Goals	He wants to know if there's a problem with the product	He wants to be sure the structure is safe. He wants effortless problem solving	He wants to be heard
Emotions & Quotes	<p><i>"They really care about me".</i></p> <p><i>"Thanks for coming so fast".</i></p> <p><i>"I really recommend Brease, they are fast and efficient".</i></p>		
Opportunities	Ensure the same level of excellence of Brease's customer care also from the local partners	Implement a referral program	



3.9 Digital Touchpoints

These are Brease's most strategic digital touchpoints.

Social Media

Profiles on the most relevant social networks to reach the target audience of residents and condominiums. The goal is to raise brand awareness, attract leads to our website and download our catalog.

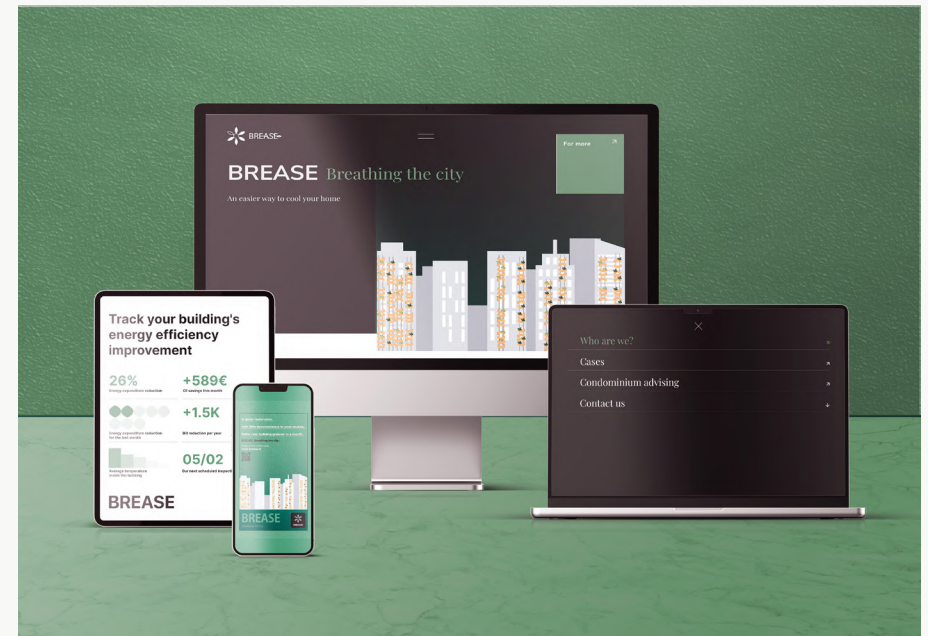
Digital Catalog

A quick and easy-to-download digital version of our main cases, highlighting the energy savings of our solution and explaining how our company can help condominiums access government funding. It can be downloaded on our website or using the QR code of our campaign.

Website + User Portal

Our institutional website is the platform through which end users and other businesses can learn about our solution. They are referred to the page through SEO and advertisements on other websites and social networks.

The User Portal is a login area where clients can enter their account. After the login the user can see the user manual of the building and check their energy savings, schedule on-site maintenance, and contact customer support.



4

Brand Identity

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4.1 Naming

Brease

Breath + Easy / Breeze + Ease

Inspiration: Brise-soleil, breeze, easy.

Breeze = Air flow, cool, fresh, natural

Breath = Take a deep breath, calmness, peace, safety, trustworthy

Ease = Low impact, affordable, effortless, practical, agile

“Brease is an easy-breezy way of improving building energy efficiency.”

4.2 Key Words

nature

low impact

effortless

fresh

urban

revitalization

4.3 Tone of Voice & Personality

Caring Professional Transparent

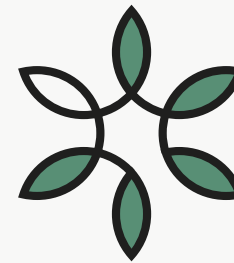
We envision Brease as a careful brand that provides effortless solutions and good end-user service care. The messaging and communication style of the brand is easy, clear, direct and transparent in order to create a trustful relationship with B2B and B2C customers.

Brease's personality is based on care giving. We appeal to the consumer's sentimental impulses, devotion to family, and need for safety. Touching music, photos of families, and a focus on giving and community will most likely be included in our marketing efforts.

Brease values their employees and frequently goes above and beyond what is required of a corporation. There is a strong emphasis on customer service, and employees are likely to be urged to go above and beyond to ensure that consumers are taken care of.

4.4 Logo Construction

Logo



Logotype

BREASE

Logo Variants

Different types of logos will be used in different contexts, depending on the scale of the space in which they are placed, their size and the specific application.



4.5 Typography

Primary Typeface

Aa

Nimbus Sans

abcdefghijklmnopqrstuvwxyz

abcdefghijklmnopqrstuvwxyz

0123456789!@£\$%^&*()_+[]{}«\

Secondary Typeface

Aa

Classico URW

abcdefghijklmnopqrstuvwxyz

abcdefghijklmnopqrstuvwxyz

0123456789!@£\$%^&*()_+[]{}«\

4.6 Palette

Primary Color

RGB: 99 144 114
CMYK: 67 34 61 0
Pantone: #639072
HBS: 140 31 56

Secondary Color

RGB: 35 82 72
CMYK: 86 59 72 25
Pantone: #235248
HBS: 167 57 32

Secondary Color

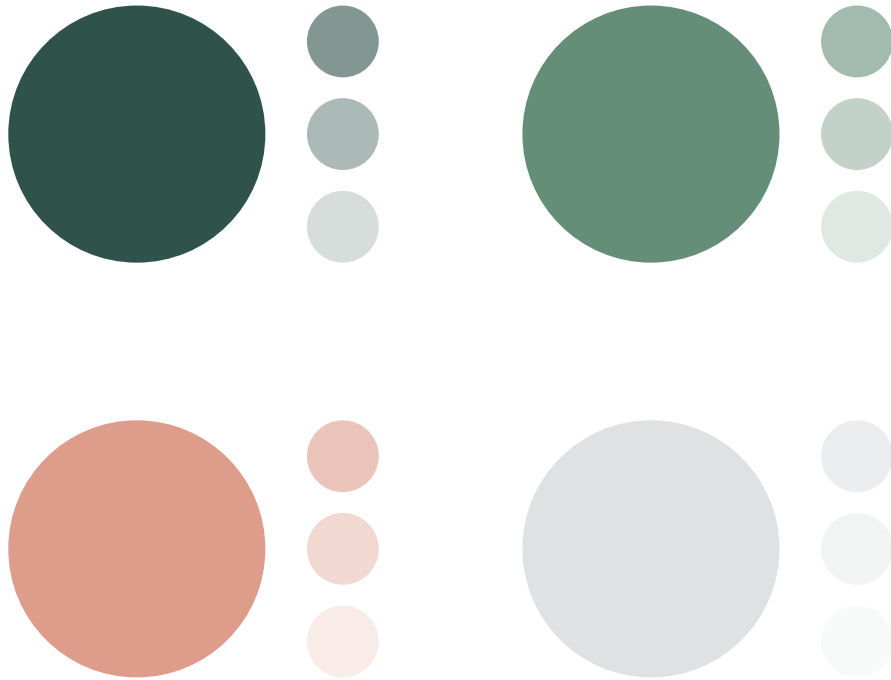
RGB: 234 167 141
CMYK: 11 43 41 0
Pantone: #EAA78D
HBS: 17 40 92

Secondary Color

RGB: 232 233 235
CMYK: 11 8 7 0
Pantone: #E8E9EB
HBS: 220 1 92

Color Shades

Color Shades is derived from the four main color variations in the brand's palette: displayed in 60%, 40% and 20% transparency respectively on a white background.



4.7 Brand Application

The use of our branding on stationery and corporate gifts is an important part of Brease brand application, as our business is primarily B2B.

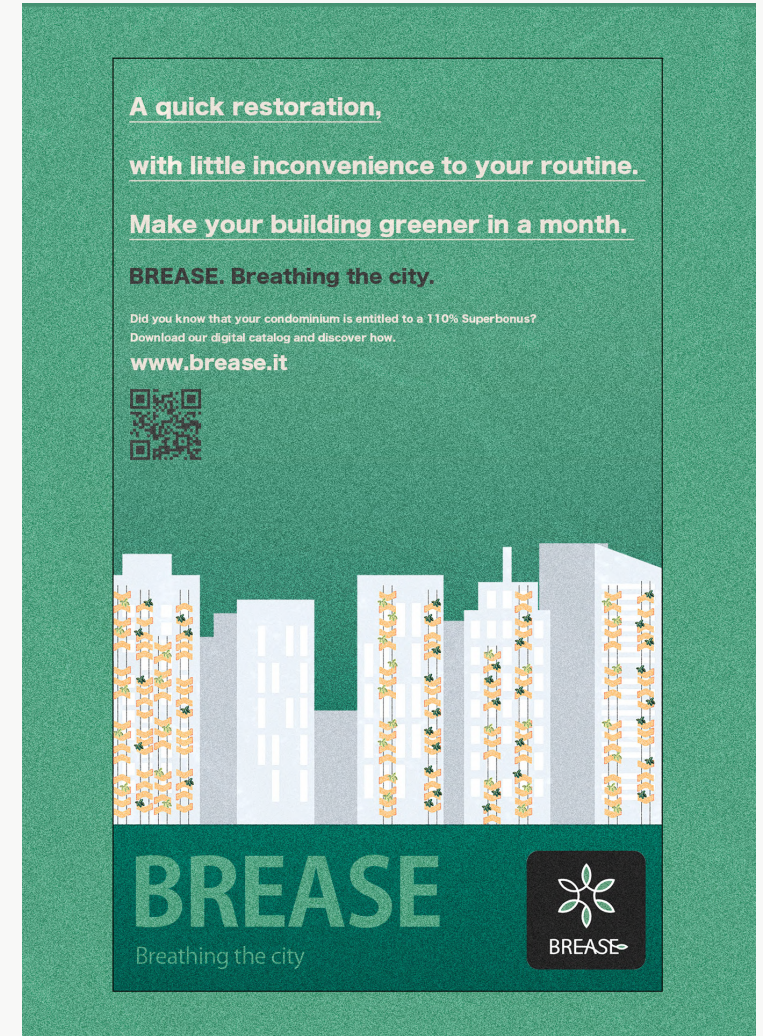
Stationery material is an important support for our legal and sales team in the customer acquisition, commercial proposal and contract signing stages.





4.8 Campaign

The advertising campaign will be broadcast on social media as well as on posters placed in strategic locations throughout cities to reach primarily end consumers.



The campaign's goal is to attract the attention of prospective users, encouraging them to download the catalog and share it with their condominiums. Through the influence of the residents of the buildings, we intend to generate leads for our sales team to contact condominiums and offer Brease solutions.

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with little inconvenience to your routine.

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Download our digital catalog and discover how.
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Tired of paying sky-high energy bills?

Tired of using air conditioning?

Want to save on your electricity bill and make your building greener?

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5

Annexes

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5.1 Background Research

Energy Poverty in Italy

Energy poverty is a multifaceted phenomenon that asymmetrically affects countries and social groups. According to the EU Commission's Energy Poverty Advisory Hub (2022) the three most commonly identified causes of energy poverty are: low income levels, poor household energy efficiency -especially as regards the performance of buildings-, and high energy prices.

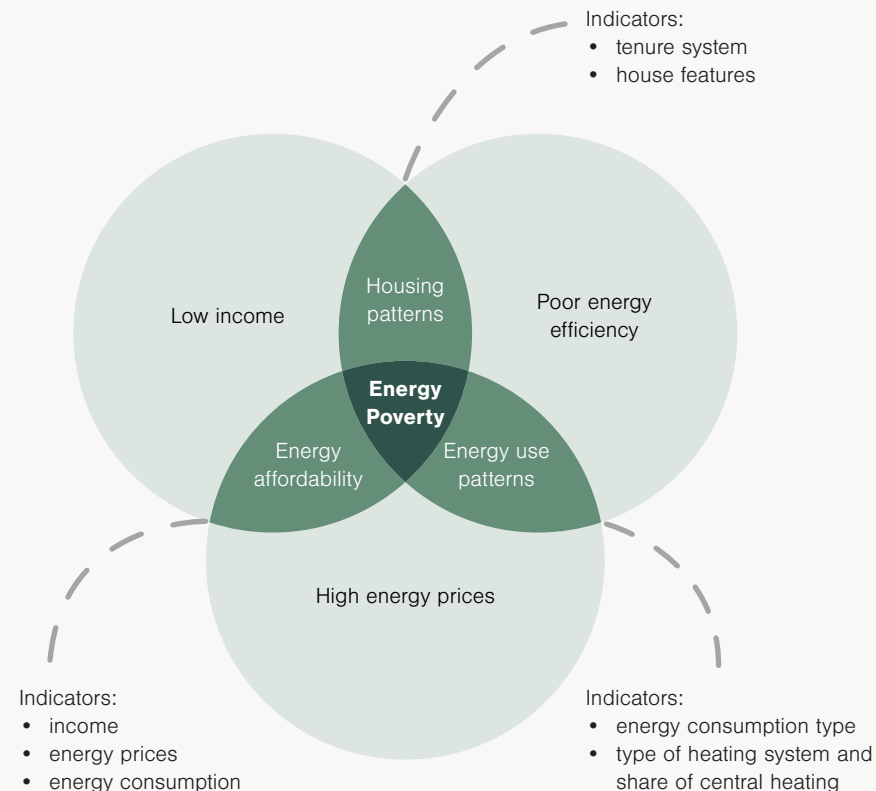
Energy poverty in Italy is greater than in several other European Union countries as the indicators show that the average of Italians who cannot pay their electricity bills or heat their homes is greater than the European medians. The main **indicators** that cause energy poverty in Italy are a combination of **high prices of energy bills with low family income**. This could be aggravated in the future by aging, changing family structure and climate changes that are increasing heat waves, leading to greater energy consumption to maintain thermal comfort at homes.

Italy's energy prices - and especially electricity - are higher than most European countries mostly for two main reasons: First, because

the energy mix, in particular for electricity, is fairly costly because it is based primarily on gas. Second, because wholesale gas prices are on average 25% higher in Italy than in other European countries, since the country is highly dependent on oil imports from neighboring countries. Although the country does not have significant reserves of fossil fuels, fossil fuel thermal power plants still provide the majority of electricity production in Italy (International Energy Agency, 2016).

ENEA estimates over **2.3 million** Italian households in **energy poverty** in 2021. However, the literature documents different levels of energy poverty between regions inside Italy. Regional diversities and disparities are evident in Italy in many ways, including geographical and meteorological variation, differences in economic activities and labor markets, and dissimilarities in institutions, social norms and environmental attitudes (Bardazzi et al., 2021).

Drivers of energy poverty and key indicators



Source: Elaborated by the authors based on Pye et. al., 2015.

Mezzogiorno

Mezzogiorno covers the Southern half of the Italian state as a macro-region of Italy that includes the provinces Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, and an insular subregion composed of Sicily and Sardinia.

The North-South divide has been a distinctive feature of Italian economic development since the beginning of the 20th century and in short, the North and the South have different cultural traditions and marked differences in GDP per capita, the composition of economic activities, and employment indicators (Leydesdorff, 2021).

In terms of income, the amount of poor households is much higher in the South than in the North. According to the ISTAT data, the risk of poverty equals 42.2% in Mezzogiorno in 2019, whereas 14.8% in the North and 21.4% in the Centre (2020). On the other hand, in terms of consumption expenditures, most household expenditures are made on housing, water, electricity, gas and other fuels in Italy but since 2018 the use of total energy by households has reversed, and Southern households now spend more than the Northern because of the use of cooling devices and air conditioning during summer.

Going proportionally with the poverty levels, the percentage of energy-poor people and the extent of inequality are much higher in Southern Italy than in the North. Furthermore, all approaches are consistent in indicating that households with children, those claiming difficulties to pay their bills, families living in poorly maintained accommodations, tenants and residents in the Southern regions are particularly vulnerable (Miniaci et al., 2014).

Moreover, the Southern part of the Italian peninsula is predominantly exposed to Mediterranean atmospheric circulation. The Mediterranean region is a 'hotspot' where climate change impacts are particularly strong, and it is likely to experience a significant climate change and will consequently become warmer and dryer. Thus, they experience the highest energy usage as a result of the ongoing rise in temperature. For instance, Sicily records the highest average temperatures in Italy frequently, which means that residents there use more energy overall and spend more on air conditioning and other room cooling systems.

Map of Mezzogiorno



Aging Population

Since World War II, the life expectancy of the Italian population shows a constant and sharp process of growth. Italy has the third oldest population in the world. As of 2020, **23% of the Italian population were aged 65 years and older**. The average age of the Italian population is 45.7 years and has constantly been increasing in recent years, with this projected to grow further in the coming decades. Projections made in 2019 suggested that the median age will be equal to 50.8 years in 2030 and 53.6 years by 2050.

In Italy, the birth rate has constantly decreased over the past years. In 2019, roughly seven children were born per every 1,000 inhabitants, about two infants less than in 2002. Evidence shows that Italian women do not feel they can afford, nor be supported in having children.

According to the latest data obtained from The Italian National Institute of Statistics (Istat), the population of Italy will decrease continuously in the coming year, while the elderly percentage is expected to increase. A shrinking population dominated by older people means less people in the overall workforce pool. The economy struggles,

companies shut down, and younger adults look abroad for opportunities. This causes the population to further shrink, and the cycle goes around again.

The economics literature almost universally predicts that an aging population will increase household energy consumption demand since older households spend more on energy, and especially heating energy, because their members are at home for a larger proportion of the day and they usually need more heating comfort. The energy culture of new Italian generations also seems more strictly linked to thermal comfort (heating and air conditioning) than to energy-saving attitudes and so an aging population also means more residential energy demand.

With its aging population and the number of working-age households continuing to grow more slowly than elderly households, the demographic structure of Italy will become increasingly less able to support wealth accumulation. Slower growth in wealth is likely to mean slower growth in future living standards, which is likely to affect access to adequate energy sources, therefore leading to the increase of energy poverty amongst Italians.

The population of Italy will be

50.4 million in 2050.



34.9%

of the population will be over 65 years of age from 23.5% in 2021.

Source: Statista, 2022

Homeownership and House Renovation

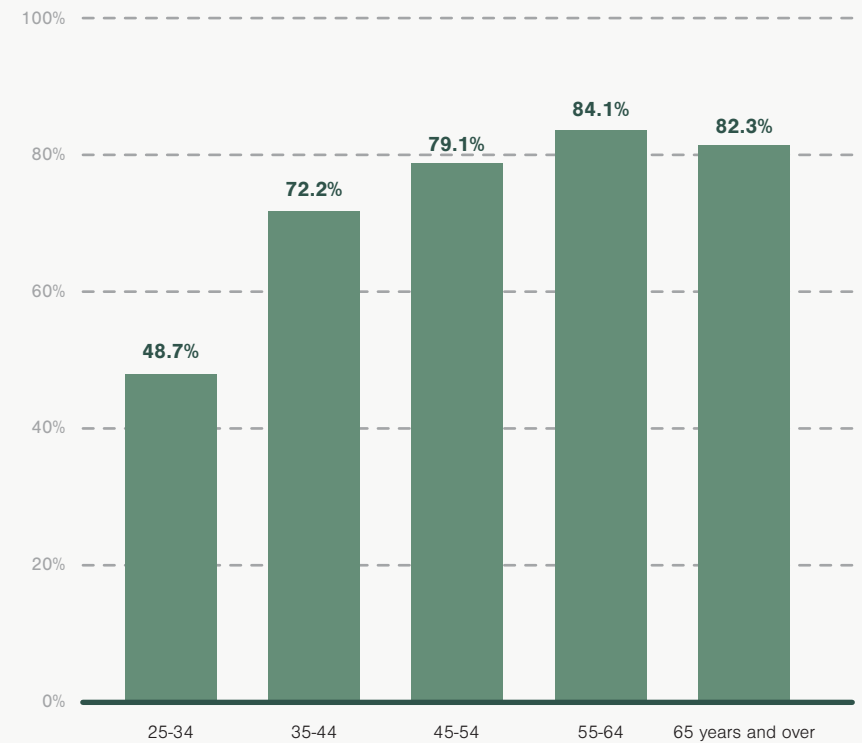
It has repeatedly been argued that family acts as a mechanism for allocating housing, since parents are expected to transfer property or economic resources to their offspring. Homeownership is directly correlated with wealth transfers, intergenerational wealth mobility, and general inequities.

Italy is a family-oriented society and there are few homeowners. Young Italians continue to struggle to obtain enough money to purchase a property on their own despite the country's increased commoditization. Italian young adults often experience employment instability and are far less likely to become property owners. Parental resources are becoming more and more important to reaching homeownership in Italy, which is becoming less and less available to all classes.

The literature often emphasizes that households moving into new homes and younger generations are more likely to invest in ways to increase the energy efficiency of their dwellings. Contrarily, in Italy, the percentage of senior citizens (those 65 and older) who own their homes and invest in solar panels and home renovations to improve house energy efficiency is comparable to the national average.

According to several surveys, such as the recent Eurobarometer waves, this type of spending signals a growing environmental awareness and greater importance assigned to environmental protection among elderly householders in Italy.

Share of individuals owning a primary residential property in Italy in 2021, by age group



Source: Statista, 2022

A Renovation Wave for Europe

The majority of buildings in Europe have inadequate energy efficiency since 75% of them were constructed before energy performance was taken into account by regulation. These older structures have a legacy that will last well past the time when the European economy aims to be emissions-neutral.

To correct this gap and to pursue the dual goal of energy gains and economic growth, the European Commission announced the policy "A Renovation Wave for Europe - Greening our buildings, creating employment, improving lives" in 2020 to promote renovation throughout the EU.

Three key areas are identified by The Renovation Wave:

1. Addressing energy poverty and the worst-performing buildings
2. Social infrastructure and public buildings
3. Carbon-free heating and cooling

With an estimated total investment requirement of 900 billion Euros, the EU's Restoration Wave policy aims for the energy-efficient renovation of 35 million buildings

over the course of the next ten years. This calls for doubling the average annual pace of building renovations, which is now at 1%, and ensuring that all renovations result in significant energy savings to meet Europe's energy and climate targets.

Only about 5% of building renovations nowadays are intended to save a significant amount of energy (more than 60%). Therefore it is necessary to ensure that all building renovations deliver substantial energy savings, and to double the overall number of these deep renovations. These improvements will not only lower emissions but also improve the quality of life for those who reside in and use the buildings, and they should generate a large number of new green employment in the construction industry.

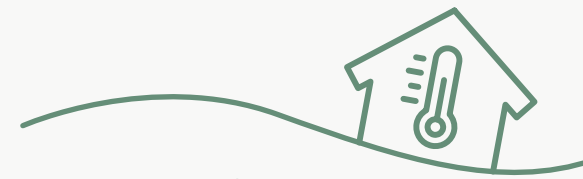
Renovation Wave Priorities



Tackling **energy poverty** and **worst-performing buildings**.



Renovition of **public buildings**.



Decarbonisation of the **heating and cooling**.

Source: European Commission, 2020

Vertical Greenery Systems

Vertical greenery systems work as natural cooling since, compared to a bare facade, they reduce the air surface temperatures behind the green layer.

A vegetation system's cooling impact is claimed to be at its peak in the summer, and locations with more solar radiation tend to perform it more efficiently. By reducing the temperature of the air in a big urban region, a greenery system also reduces the urban heat island effect.

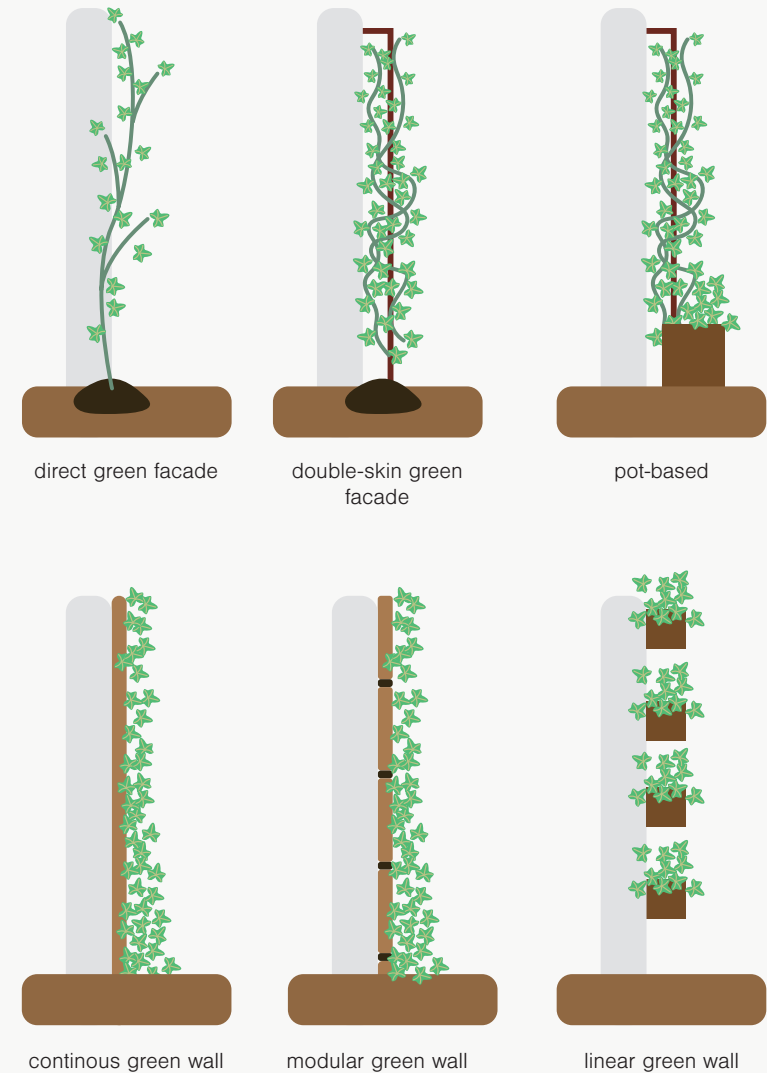
Both a temperate environment and a hot, tropical one can effectively lower the surface temperature with the aid of green walls. Green facades help bring surface temperature differences of up to 5.8°C in the summer and 2.1°C in the winter.

A green facade can significantly lower the cooling load, potentially saving energy in both temperate and hot climates. In hot areas, green facades provide considerable help on savings in air-conditioning consumption. Studies show that they help to save energy in summer up to 34% and up to 4.2% in winter.

When combined with shading devices, the green facades help improve the cooling with

many advantages. Firstly, the green facade can help to reduce the outdoor temperature and improve the thermal performance of outdoor spaces. A significant improvement in the urban scale can be facilitated by a large number of homes with green facades. Second, trees and plants in general offer a variety of other advantages, like air purification, noise reduction, creating a relaxing atmosphere for the occupant, etc.

Classification of vertical green



Source: Kromoser, B. et al., 2020.

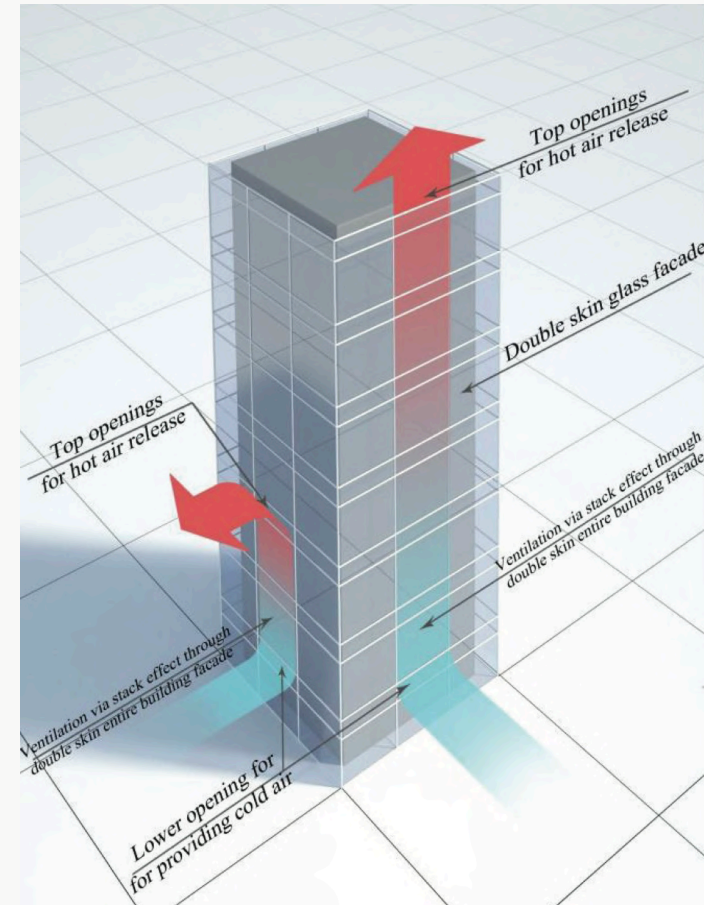
Ventilated Facades

The effect created with our panels is that of a "thermally ventilated wall". This describes a very efficient thermal insulation applied to the exterior walls of the house. A thermally ventilated wall can provide the building envelope with high thermal performance throughout the year. For this purpose, there must be a thermal insulation layer and an air gap. (Sala & Carta, 2013)

The chimney effect explains the vertical temperature distribution and air movement within the air cavity at different heights of the building. This is because the chimney effect causes the convection of the air heated by the absorption of solar radiation through the system. Therefore, it was found that the hot air rises upward into the air cavity. On the south facade, the most solar radiation is generated by many hours of sunshine and the temperature increases rapidly. Due to the higher irradiation, the temperature in the air cavity also rises. When the outdoor temperature is higher than the indoor temperature, as is the case in summer, the heat flux is not incoming, but as preferred this promotes heat removal from the building's interior spaces. Studies show that in hot climates, some of the warm air is removed if there is adequate airflow in the cavities. On

the other hand, it must be considered that in the case of very high outdoor temperatures and strong radiation, there may be increased heat gains (Aparicio-Fernández et al., 2014).

As in our case, many of the thermally ventilated walls combine a solar shading system on the southwest side to take advantage of the climatic conditions instead of considering them as a negative adversary. For this purpose, louvers and openings are installed to meet the different climatic requirements and improve the performance of the building in summer as well as winter. (Sala & Carta, 2013)



Source: Elotefy, H. et al., 2015

5.2 Primary Research

Interviews

Considering the project brief was to renovate old houses to be more efficient, we wanted to get ideas from potential end users about their energy usage habits and perspectives for home renovation.

We conducted interviews with 4 different Italian house owners from greater Milan area in order to get insights to enrich our PSS.



Roberta

72 years old
Monsa



Salvatore

65 years old
Milan



Rosella

82 years old
Pessano
con Bornago



Claudine

86 years old
Cassina
de' Pecchi

About Energy Prices and Energy Consumption



When we saw the latest bills we were a little scared. We did a comparison of the gas bill between 2020 and 2021 and saw that the consumption was the same, only the price changed.



— Roberta



On TV they show data on cost reductions of 200€. But we don't see it. I don't expect the precautions I apply to my habits to have a noticeable impact on expenses, but I know they exist, even if they are small.



— Rosella



I've always been careful but the difference with now is that now I'm stricter (about energy consumption).



— Claudine

About Home Renovations

“ The problem with making decisions from this point of view is the fact that living in a condominium, when interventions of this type are carried out, one must confront and decide with the entire condominium through an assembly and everyone must agree. The interventions that we as a single family can do are few.

— Roberta

“ However, for everything that is done for restructuring or change on a private level, a consultancy or approval from an expert must be paid. And it means spending lots of money. And for condominium works, obviously everyone must agree.

— Claudine

“ No, I haven't used it (Superbonus 110%) because you can only use it for condominium jobs or one or two family houses.

— Salvatore

About Energy Literacy and Environmental Awareness

“ I know these things because I watch a lot of TV shows about these topics. From the TV I know that even all the lights and appliances on standby waste energy so I unplugged the electric toothbrush.

— Rosella

“ I'm not an engineer but I'm interested. I try to understand it to avoid fraud. People in general don't know much,(...) and are made fun of.

— Salvatore

“ If we had the money we would also like to have solar panels for a matter of economic savings and environmental sustainability.

— Rosella

“ From the point of view of energy and energy saving, I am very fixated because I believe that for the period we are living in, it is right to do something.

— Salvatore

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