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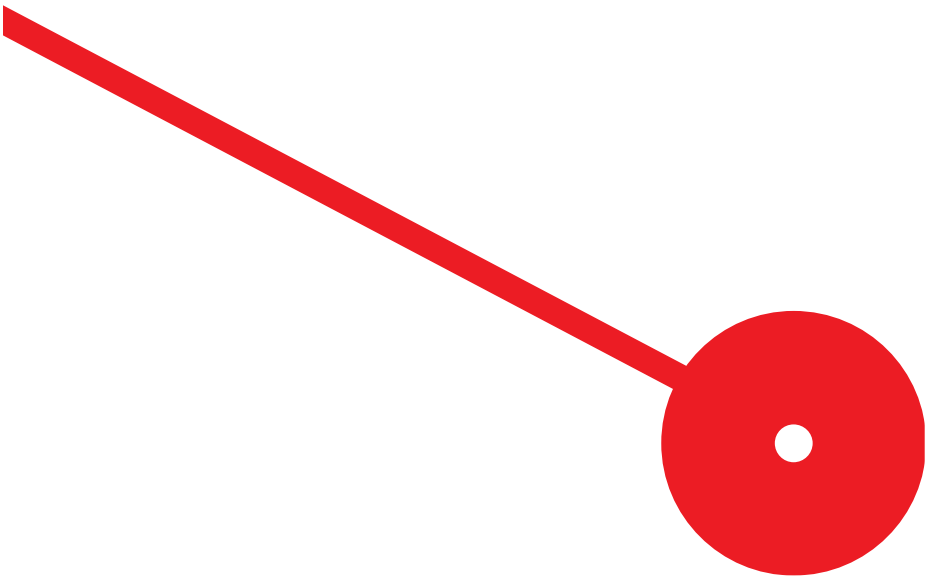
M

Master
Intercultural Studies For Business

"Soil Return"

Ana Margarida Rouxinol Sampaio Dias

10/2021



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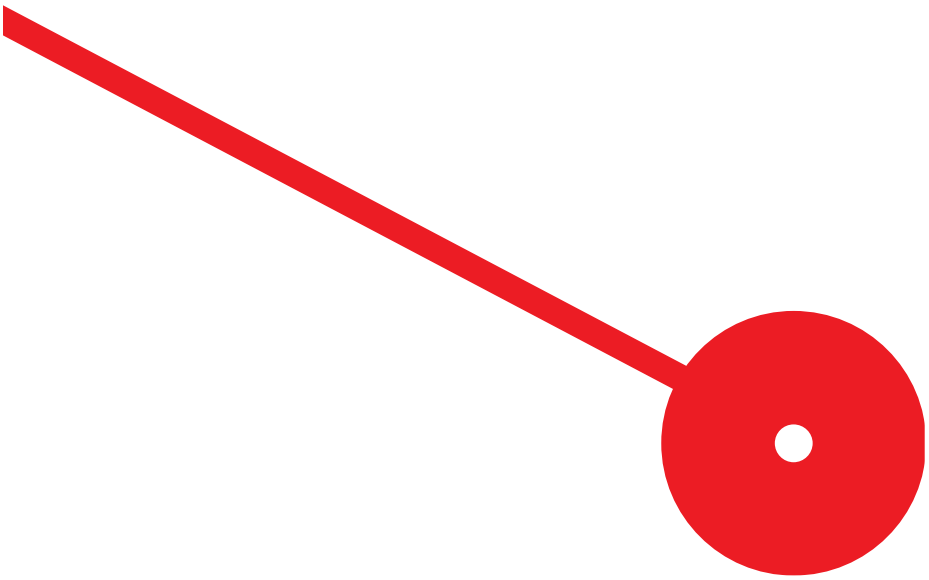
Project Work presented to Instituto de Contabilidade e Administração do Porto to obtain the Master's Degree in Intercultural Studies for Business, under the supervision of Professor Marco Ribeiro Lamas.



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Dedication

I dedicate this project work dissertation to my parents and my sister, for all they have done for my personal, academic, and professional happiness and fulfillment, and for always encouraging me to follow my dreams.

To Alfredo for all his support and understanding every day.

Acknowledgements

I would like to thank my supervisor, Professor Marco Lamas, for all the support and wise contributions he generously gave me and with which he helped me to enrich this project.

I also thank the professors who at ISCAP, throughout my academic career, were true masters, inspiring me with their wisdom, knowledge, and, above all, with the correct and dedicated way in which they related to and respected the students.

To my colleagues who in this journey became friends for life, for the companionship and mutual collaborative sharing that they had the generosity to materialize, especially to Catherine who always supported me, and for all her patience.

I couldn't forget the wonder quintet, my Belgians Cláudia, Helena, Rita, and Teresa, thank you for cheering me up every day.

Last but not least, I thank God.

Resumo:

A economia circular é atualmente um dos grandes objetivos estratégicos da União Europeia, pois visa a sustentabilidade ambiental, social e económica, sem comprometer o futuro do território europeu e das comunidades humanas que nele habitam e com ele interagem. O consumo e a consequente produção de resíduos domésticos de famílias em países industrializados tem ganhado mais destaque como um dos principais fatores na poluição modificável (UNEP 2010 - ver Barbarrossa 2016). "Soil Return" nasce como uma solução para este problema. O "Soil Return" é um projeto de tecnologia ambiental voltado para o consumidor que consiste num recipiente pequeno, fácil de instalar e inodoro que possibilita o tratamento rápido de resíduos alimentares produzidos na preparação de refeições caseiras ou em cozinhas profissionais, através da compressão e redução de resíduos e reaproveitamento de água em outras aplicações. Este projeto premitiu criar um Plano de Negócios baseado na metodologia Business Model Canvas proposta por Osterwalder e Pigneur (2011), que visa avaliar a viabilidade do produto, e um Plano de Gestão de Negócios concebido para permitir uma adaptação regular do modelo de negócio à evolução das circunstâncias externas, levantando questões-chave e destacando elementos que possam representar vantagens competitivas justificadas pelas cinco forças de Porter.

Palavras-chave: Economia circular; Business Model Canvas; Gestão de resíduos; Sustentabilidade ambiental; Empreendedorismo

Abstract:

The circular economy is currently one of the European Union's great strategic objectives, as it aims to achieve environmental, social and economic sustainability, without compromising the future of the European territory and the human communities that inhabit and interact with it. The consumption and subsequent production of domestic waste of families in industrialized countries has been gaining more prominence as one of the leading factors in modifiable pollution (UNEP 2010 – see Barbarrossa 2016).

"Soil Return" is born as a solution to this issue. "Soil Return" is a user-oriented environmental technology project that consists of a small, easy-to-install and odorless container, which enables the rapid treatment of food residue produced in the preparation of home meals or in professional kitchens, through the compression and reduction of residue as well as the reuse of water in other applications.

This project sets out to create a Business Plan based on the Business Model Canvas methodology proposed by Osterwalder and Pigneur (2011), which aims to evaluate the viability of the product, and a Business Management Plan conceived to allow a regular adaptation of the business model to the evolution of external circumstances, raising key questions and highlighting elements that could represent competitive advantages justified by Porter's five forces.

Key-words: Circular economy; Business Model Canvas; Waste management; Environmental sustainability; Entrepreneurship

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List of abbreviations

GDP – Gross Domestic Product

ICT – Information and Communication Technologies

PEST – Political, Economic, Social, And Technological

SWOT – Strengths, Weaknesses, Opportunities, and Threats

ACR + – Association of Cities and Regions for sustainable Resource management

WWTP – Waste Water Treatment Plant

USA – United States of America

PAYT – Pay As You Throw

B2B – Business to Business

B2C – Business to Consumer

IEFP – Instituto de Emprego e Formação Profissional

The circular economy is currently one of the major strategic objectives of the European Union to achieve environmental, social, and economic sustainability, without compromising the future of the European territory and the human communities that live in it and interact with it.

Adhering to a circular economy model to the detriment of the old linear economy model implies structural changes in industrial production processes, both in terms of the use of natural resources, and concerning the efficient use of all production factors, either about raw materials, as about energy sources and waste reduction.

This cultural revolution in the economy calls on all sectors, primary, secondary and tertiary, but it also involves families and consumers in general in this commitment.

There is a change in mentalities that is needed and that is already underway in societies that are more sensitive to the challenges of environmental sustainability. But this change is not enough to guarantee the planet's environmental sustainability, especially if it does not become a global change.

And when we talk about change, we talk about changing consumption habits, but also and above all profound changes in behavior, a fact that implies understanding the concept of circular economy in what it includes in terms of how to deal with waste, abandoning the logic of the disposable or entirely lost and useless, adopting a new approach that equates recovery, recycling, and reuse, adding value to waste with the potential to be reintroduced and put into circulation in the economy.

The “SOIL RETURN” project fits into the conceptual context of the circular economy model, presenting a technological proposal for families to adhere, in a domestic version, to the circular economy, transforming biological organic waste produced in the kitchen into valuable fertilizer nutrient for soils and, consequently, also endowed with economic value. This proposal calls, necessarily, the adhesion to a more sustainable way of life and the adoption of the technological solution that the project contemplates, in a future perspective, promoting its scalability and extension to restaurant kitchens and of a more industrial dimension.

By adopting the solution advocated in the project, families will immediately have concrete advantages on two levels: - firstly, they will make an effective contribution to the environmental sustainability of the Planet, since the reuse of organic waste represents

an effective saving of natural resources present in arable land; on the other hand, they will be able to control some impacts that the simple deposition of biological waste in their kitchens ends up causing, considering that the accumulation of such organic waste, leftover vegetables, fruits, and other biodegradable foods, when they decompose, enhance the formation of molds and attract various insects, mainly mosquitoes, in addition to producing unpleasant odors.

It is also important to consider that the economic value of these wastes will be greater the sooner they begin to be properly treated, to avoid losing important ingredients for their recovery and better reuse.

One of the biggest challenges that the project will face will certainly be to be well understood and accepted in cultures that are so diverse and contrasting in their values, beliefs, traditions, uses, and customs.

This project combines several concepts that need to be well explained, both in terms of the general benefits for the communities, but also in terms of the concrete benefits for families and catering companies, combining individual and collective environmental responsibility, with the possibility of each family to start in their kitchen an effective and daily activities that will lead them to participate locally in this global change, even managing to derive their advantages from it.

Soil Return appears to solve this problem. A small container to be installed in the kitchen will allow the treatment of food waste produced in the preparation of family meals or restaurant kitchens.

To be able to develop the Soil Return business model, a methodology called “Business model canvas” was used, which will allow the development of an economically and financially viable and environmentally sustainable business model.

The methodology takes into account cultural factors of different markets, the level of sensitivity to issues of environmental sustainability, and the potential for economic viability that the project brings.

1.1 Circular Economy

The concept of circular economy arises from the awareness that resources, especially natural resources, are not unlimited, but on the contrary, they are finite.The Circular Economy presents itself to society as a similar economic model because it is inspired by the ecology's energy circulation model (Chen, 2009). It is a model that adopts the feedback process (feedback), by mimicry with natural ecosystems, as opposed to the processes of the traditional linear economy (Geng & Doberstein, 2008). One of the most striking differences of the linear economy is that the consumption of natural resources and the production of waste are little, if not taken into account, with their environmental impacts being neglected, with their energy potential being untapped and the pollution deposited being reduced. Without concerns about its economic value, even if residual, nor about its possible danger and threat to ecosystems (Sauvé, Bernard, & Sloan, 2016). A fundamental change takes place in this concept that opposes the old economic concept of extraction, transformation, and generation from waste, without major concerns about the origin and size of stocks of raw materials based on natural resources, to a new economic concept based on the awareness that natural resources are finite and that their unlimited extraction compromises the future of the Planet.

In the perspective described above, the circular economy, as well as the green economy, mutually complementary concepts, are not just an alternative to the linear economy, but economic models that are essential for future development, since the old model proved to be unsustainable, compromising threatening not only development but in the long run, also the survival of multiple ecosystems and of humanity itself. It is now widely agreed that an economy that preys on natural resources that devastatingly consumes them as if there was no tomorrow is, in fact, absolutely unsustainable, so it is important to bear in mind that the circular economy is based on the assumption that the raw materials of origin natural resources are scarce, so their reuse and return to the production chain is a way to minimize the environmental impacts of their extraction, counteracting the previous predatory impetus, so there is no doubt that the excess production of valuable waste, when it occurs in production processes submitted to linear economic models it represents a loss of value, considering that its reuse in other production systems is not considered right from the start (Mirabella, Castellani, & Sala, 2014). Much of what in the linear model was a natural or biological waste of low or zero economic value is now seen as a reusable resource, which can be used in other production chains or returned to nature without

posing a risk to its ecosystem balance, considering that its possible environmental impact is duly considered and every precaution is taken to protect nature in the return of bio-waste to its original environment. This consideration is essential, bearing in mind that in this circular model, raw materials should, whenever possible, be obtained through processes of recycling and reuse, rather than extraction. Note that in the circular economy, the environmental impact is weighed even before the transformation and production process, so that waste, when unavoidable, is reduced to the minimum possible, seeking to ensure its future reuse.

The circular economy inspires business models that better face the challenge of the growing scarcity of resources and, not least, of waste disposal. This path reveals economic advantages, but also advantages in terms of the reputation of entrepreneurs and their businesses and brands, given the growing awareness of public opinion on the scale and complexity of environmental problems and the impacts of the linear economy in their aggravation (Homrich, 2018).

It is appropriate to carry the "C2C - Cradle to Cradle" concept, visually represented in the figure 1, which aims to guide all productive economic activity in the sense that all raw materials extracted from nature return to nature. successfully, it is essential to invest in the adoption of public policies and corporate governance strategies based on the four R'S. And the 4 R'S are in themselves concepts that guide the functioning of the circular economy and that indicate processes that are essential to the circularity of waste in general, but that can be optimized in what refers to natural and biological waste. These four R's, which are fundamental axes of the processes of the circular economy: Reuse; Repair; Renovation; Recycling. The concept of circular economy, according to the theoretical formulation of some authors, consists of the extraction, production, and consumption of goods in circuits with closed circular flows, which introduce into circulation. n virgin natural resources and their residues, to maximize their value, through the recurrent re-entry into the circular production system as long as it is possible to extract value and reduce it by eliminating all possibilities of producing environmental impacts (Sauvé, Bernard, & Sloan, 2016).

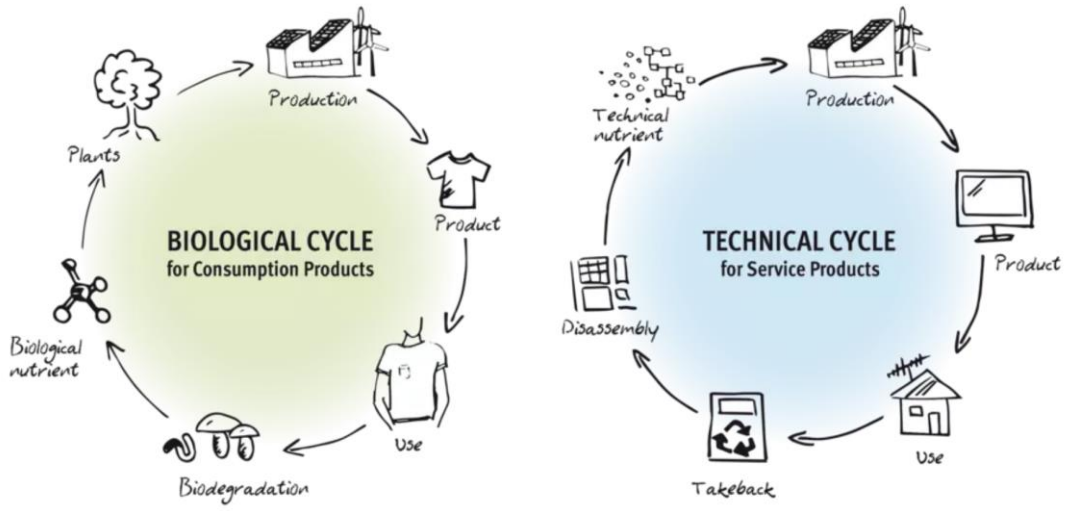

Figure 1 - Cradle to Cradle® concept (C2C), Drees & Sommer

From another perspective, perhaps one of the most appropriate to the theoretical framework that is being sought for this project, the concept is that circular economy is a model of the economy that supports the preservation of the value of raw materials, components, and goods, taking care to maintain their usefulness for production processes for the longest possible lifetime, which makes this model a model characterized by its ability to restore and regenerate natural ecosystems and thereby ensure sustainability. In this sense, it is noteworthy that the concept mentioned above is currently one of the most shared and consensual, both at the academic level, by the various researchers who are dedicated to studying this matter, but also in international political forums and at the governmental level, as well as with industry and markets (Bocken, Ritala, & Huotari, 2017). The fact that the circular economy facilitates the emergence of innovative business models with more efficient solutions at an environmental level, which not only help to face the great challenges facing national economies, faced with serious environmental impacts but also facilitate the increase of solutions neutral and without impacts on ecosystems, it has led various sectors of contemporary societies to understand it in an idealistic vision of the future (Mulrow, 2017). Undoubtedly, the circular economy presents itself at a global level as a new paradigm for sustainable development, being necessary, considering that it is a relatively recent discipline in the context of Social Sciences, to deepen concepts and, above all, to create and develop more and better tools that facilitate and leverage the adoption of its essential principles (Bocken et al., 2016).

The paradigm of the circular economy is based on four guiding axes for the definition of the economic model:

- The circular design of processes and products;
- Closed and reverse circles;
- New business models based on the previous axes;
- Organizational conditions facilitate and favor the circularity of the system.

A significant and consequent change must be made in the way entrepreneurs think and act, so that they can deal with the complex systemic challenges as efficiently as possible, in line with the pursuit of global goals for sustainable development (Bocken, Rana, & Short, 2015). It seems to result, from the various theoretical contributions brought here, that the adoption of the concept of circular economy at a global level will be an inevitability, either due to the uncontrolled increase of the population on a planetary level and the growing scarcity of raw materials based on finite natural resources, as well as by strong inflation of essential raw materials, a phenomenon driven by the unequivocal finitude of natural resources. This vicious cycle has been causing enormous pressure on international markets, leveraging the volatility of raw material prices.

1.1.1. Circular Economy in Europe

In addition to the above warnings, the 7th Action Program of the European Union (EU) can also read in what refers to the Environment: - "Our prosperity and the health of our environment are the result of an innovative circular economy in which nothing is wasted and where natural resources are managed sustainably and biodiversity is protected, valued and restored to enhance the resilience of our society" (European Commission, 2020, p. 22).

In this document, the European Commission proposes that the Circular Economy should:

- enable net savings for EU companies of around €600 billion or 8% of their annual turnover;
- increase resource productivity by 30%;
- reduce greenhouse gas emissions by between 2 and 4%;
- increase GDP by around 1%;
- create more than 2 million jobs.

As already shown above, the European Commission also understands that the measures inherent to the concept of circular economy and the concept of a green economy are converging in the pursuit of the objectives of environmental and economic sustainability, namely concerning greater energy efficiency and lesser incorporation of energy in production processes, in addition to the adoption of more intelligent industrial production methodologies and, above all, more efficient in eliminating or reducing waste and surpluses.

There are also concrete examples in Portugal today of the effectiveness of the conceptual model of the circular economy and the familiar concept of the green economy.

This presents a truly emblematic example of this effectiveness:

Nutrimais, an organic agricultural corrective designed by the inter-municipal waste collection entity of the Porto Metropolitan Area (AMP), Lipor. This natural fertilizer is produced by recovering and reusing food and green waste. In 2015, the use of 44,000 tons of waste allowed the production of 11,000 tons of this product, which is placed on the market in the form of granulated powder with high potential nutrients and is extremely useful for the correction and enhancement of agricultural soils. The commercialization of NUTRIMAIS is a success, considering that the possible annual sales volume, given the production capacity installed at the LIPOR factory, cannot satisfy the demand for the product, which is insufficient to supply the needs of organic farming, prevented from use fertilizers with any chemical ingredient.

1.2 Sustainable or Environmental Entrepreneurship

Taking into account the nature of this project, it is useful to research in order to carry theoretical production that helps the understanding of the conceptual context and the framework in society and the market, by entrepreneurs with civic concerns about environmental sustainability and the preservation of ecosystems. The area of theoretical studies that focuses on sustainable entrepreneurship has as its field of work, either the recognition of environmental issues with which contemporary societies have to face, such as the identification and exploration of opportunities based on the possibility of presenting innovative and creative, with the potential to generate economic gains but, at the same time, also environmental and social gains (Belz, & Bider, 2017, p.2). The concept of sustainable development contributes to the construct, which implies awareness of the responsibility to satisfy present needs without compromising the needs of future

generations. The challenge to current generations lies in the responsibility to preserve Nature, adopt ways of life, both individual and community, that guarantee present and future sustainability (Shepherd, & Patzelt, 2010). It is important to bear in mind that terms and concepts such as eco-entrepreneurship, environmental entrepreneurship, and green entrepreneurship are used as synonyms of sustainable entrepreneurship, as they are essentially based on the same awareness (Pacheco, Dean, & Payne, 2010). It is, however, convenient to separate from this alleged similarity, the concept of eco-entrepreneurship which, according to some authors, deviates slightly from the concept of sustainable entrepreneurship, since the first aims to contribute to the resolution of problems and generates an economic value based on these solutions, while the second, in turn, it also contributes to solving social and environmental problems, but through doing business. While eco-entrepreneurs assume objectives focused on obtaining gains that allow them to intervene by participating in the solution of eco-environmental problems, in sustainable entrepreneurship its actors aim to promote sustainable development through profitable corporate activities that do not compromise the environmental balance or future sustainability (Schaltegger, & Wagner, 2011). It is important to remember that sustainable entrepreneurs offer sustainable solutions for the market (Wüstenhagen, Hamschmidt, Sharma, & Starik, 2008), developing businesses to solve social problems and environmental challenges (Osburg, 2014). In building their business models, the issue of balance between economic factors and social and environmental factors is crucial. When they explore the opportunities identified among environmental problems, they assume the responsibility to inform and promote clarification to consumers about the environmental attributes of their products and services (Dean, & Mcmullen, 2007).

Considering the fact that they assume the responsibility referred to by the aforementioned authors, the activity of entrepreneurs who carry out their activity in this area is seen as being guided by a sense of civic and environmental mission (Schaltegger, Hansen, & Lüdeke-Freund, 2016, p. 266). Still, on the path of thought of the aforementioned authors, the personal values of sustainable entrepreneurs are relevant, since it is based on this framework of civic values that strengthen their legitimacy. A legitimacy that will be necessary and useful for the development of its activities. In order for their civic and environmental values to be perceived, internally and externally, it is important to know their intentions, the guidelines they intend to implement and what level of knowledge they have about environmental problems, and the opportunities they have identified in

them (O'Neil; Ucbasaran, 2016). These theoretical considerations carried here facilitate, along with other key constructs, the understanding of the motivation that drives this project.

1.3 Business Model

As can be seen in other relatively recent areas, the theoretical production on this subject still does not present the level of development seen in other areas with more time of study and in-depth study. However, research was undertaken, as deep as possible, to select the theoretical constructs that best serve the purposes of this project. In fact, it is common to find in entrepreneurship projects some attempts, some understandable and others not so much, of "definition" of its business model, through which it seeks to demonstrate what it is based on and how a given business can work.

The Business Model concept begins to appear frequently in the context of modern management with the advent of the democratization of the internet and with the appearance of so-called companies with nomenclature found to distinct companies that were beginning to emerge, with the global network as an environment conducive to the development of their business (Orofino, 2011). This author is one of those who advocate that the concept still needs to be better theoretically stabilized.

There is often a lack of clarity in the use of certain terms, such as strategy, the business concept, the economic and revenue model, and, in a broad sense, the business model itself. The confusing use of these nomenclatures and, above all, of the concepts that are inherent to them, can deprive entrepreneurship projects of their solidity in terms of their projections and prospective vision (Morris, Schindehutte, & Allen, 2005). These authors, aware of the need to develop structured thinking that could help entrepreneurs, focused on the matter and managed to agree on three fundamental categories of theoretical constructs that can serve in structuring business models:

- The economic ones;
- The operational ones;
- The strategic ones.

It is through the business model that an entrepreneurship project is shaped, how it is intended to create, deliver and capture value for an organization (Osterwalder, Pigneur, & Tucci, 2005). These authors expressly use the term organization, since the logic of its

design for a business model can also apply to public organizations, social sector institutions, with or without profit, and other entities that aim to create, deliver and capture value, even if its activity is not compatible with the economic nature of a company in its classical framework and exclusively focused on the transaction of goods or services. But in another theoretical approach, there is the concept that the business model takes care of demonstrating the content, structure, and governance of prospectively designed transactions, intending to create value through the exploration of business opportunities (Amit, & Zott, 2001).

It is important to retain from the conception elaborated by Mayo and Brown (1999) their allusion to the model based on the main interdependent systems that create and sustain a competitive business. The definitions at the strategic level emphasize the global orientation of the market position to be assumed by the company, the interactions between organizational boundaries, and the opportunities for growth and expansion. The decision elements, in turn, integrate the identification of all stakeholders, perspective the creation of value, the differentiation of the offer presented to the market, the vision, the values of the organizational culture and the networks, and strategic and operational partnerships. In a perspective that complements the others mentioned here, it is considered how a company captures and selects its customers, organizes and differentiates the offer it presents to the market, establishes the processes that it will ensure internally and those that it is most convenient to externalize, structure all human, material, economic and financial resources, positions itself in the market and presents its value proposition to its stakeholders (Slywotsky, 1996).

Given the theoretical elaborations mentioned so far, despite the risk that is always run when rehearsing a brief synthesis that removes from each author's thought the most significant constructs, we tried to avoid reducing simplifications, opting to collect the essence of what can serve the purposes of this project. And in this sense, it will be important that the business model aligns itself as a representation, as objective as possible, of the set of variables that are stratified into the three lines of fundamental theoretical constructs, the strategic level, the operational level, and the economic level, from which decision-making processes are established to obtain competitive advantages in the businesses to be developed in previously selected markets. Thus, in the research undertaken with a view to the elaboration of this theoretical framework of the Business Model, other theoretical considerations were also carried out, which are reputed to be

converging towards each other in terms of the essence of the concepts, but which in many aspects are complementary and, thanks to this enriches this theoretical compilation, which is why we are particularly interested in considering essential factors in the development of a business model such as the technologies that will be necessary to incorporate into the product and/or service; the benefits that can be offered to customers; the markets where the product will be sold; the projection of expected revenue from sales; and the cost structure with the respective profit projection (Orofino, 2011).

But another perspective presented more simply states that Business Model needs to identify customer needs, how they expect them to be satisfied and how much they will be willing to spend to obtain the products or services with which they intend to satisfy these needs, in a projective exercise as to how a company should organize itself to satisfy its customers and obtain the intended profits with this activity (Teece, 2010).

Another conception, shared by two authors, we have that business model allows establishing the position of a company in the value chain and its competitive position in the market, with the backdrop of making a profit. Additionally, the exercise of building the business model is proposed considering the following functions: adapting the value proposition to customers; selecting target markets; establishing how to capture revenue from sales; structuring the value chain; identifying the resources needed to make the value chain work; study the cost structure and estimate potential profits; define the market positioning strategy and connection with stakeholders, especially suppliers and customers; organize the company and prepare it to define strategies that allow it to compete with a competitive advantage in selected target markets (Chesbrough, & Rosenbloom, 2002). There is also another shared vision, which maintains that the Business Model must simultaneously allow the stability necessary for the development of a company's activities, having, however, sufficient flexibility to be able to adapt to change whenever necessary (Cavalcante, Kesting, & Ulhoi, 2011).

In a very simple way of referring to the concept, one of the great theorists of modern management claims that it consists in defining the customer, the value to be delivered to the consumer, and the best way to offer it on the market (Drucker, 2002). Other authors emphasize the importance of the economic factor in the construction of the Business Model, highlighting the combination of various aspects that aim at creating value and obtaining financial results, as well as the company's sustained growth. The authors' highlight value as the result of using the resources available in the company, identifying

innovation as one of the most relevant from the perspective of entrepreneurship, stressing that in this process the way the company relates to stakeholders, especially customers, suppliers, and strategic partners (Morris, Schindehutte, & Allen, 2005). Thus, taking into account the substance of the content of the various theoretical conceptions considered above, it is possible to stabilize the understanding that all this theoretical production is useful for the development of the project, in the sense that it provides the fundamental constructs that will serve as guiding keys to architect and to build the business model with greater solidity, helping to enhance relevant critical success factors and, perhaps, to reduce the possibilities of unguarded risk. In a sense, the business model can be understood as the mapping of the variables that allow the entrepreneur to advance towards the realization of their projects, anticipating future scenarios and realities, in order to manage their investments and the activities that they will bring yield, with better perspectives on the efficiency of the processes to be adopted and, also, on the effectiveness of decisions.

1.3.1. Business Model Canvas

Business model canvas is a tool that, in a simple and common language, seeks to facilitate the description, visualization, evaluation, and change of business models (Osterwalder, & Pigneur, 2011). These authors developed a dynamic tool in the form of a map designed to create, modify, understand and innovate business models. The development of this tool and its evolution, maintaining its original purpose of presenting a clear and accessible language, allows the different actors in the construction of the model to share ideas and work together progressively (Orofino, 2011). One of the most useful aspects is the fact that it is possible to coherently illustrate and align ideas, which facilitates the common understanding of the model by all participants in its construction or in the introduction of changes, preserving the alignment of everyone on the present and future scenarios (Osterwalder, & Pigneur, 2011). In the dynamic tool, canvas is divided into two parts:

- on the right, the emotional side for the relationships and interactions between the interveners is represented;
- on the left, the logical/rational side focused on process efficiency;
- the value proposition appears in the center, representing the reason that gives meaning to the convergence of purposes arising from the left and the right.

The business model canvas tool is seen as useful, easy, and practical in terms of handling, presenting a complete view of all the business logic simultaneously, thus facilitating its

analysis, faster understanding, promoting dialogue, and encouraging creativity, with stakeholders having access at the same time to all the information that constitutes the business model (Osterwalder, & Pigneur, 2011). It is interesting for entrepreneurs to be able to have on a simple sheet of paper, a global representation of the business model in a holistic approach, which is for many truly innovative.

The parents of this tool suggest that the canvas be put on paper and the ideas presented by the participants in its preparation placed thereon post-its, making the process more flexible and dynamic, but also more practical and faster, since this method facilitates the meeting of people around the document, raising the debate of ideas (Osterwalder, & Pigneur, 2011). And so, it can be concluded, based on these theoretical considerations that have at their core a sufficiently stable consensus, that business model canvas is, in fact, an easy-to-use, practical and useful tool that meets the needs of business entrepreneurs. today, faced with requirements clearly different from those of a relatively recent past, in which the time factor and the rhythms of the dynamics of social and economic changes did not present the acceleration and rigor with which they have to face today.

1.4 Interculturality

Given the nature of this project, it is useful to bring the constructs inherent to interculturality into its theoretical framework, considering that it can present itself as a critical factor for success, either internally in the business organization that it will eventually have in charge of developing the project, as well as externally, in a phase of expansion into markets with different cultural realities. We can thus, somehow, understand interculturality as a competence that has as an essential tool, the ability to alleviate, resolve or mitigate difficulties that may arise at the level of interpersonal or institutional relationships, caused by cultural differences between interlocutors. It is important to understand that the use of intercultural competence is extremely useful to help avoid misunderstandings or misunderstandings of the values, beliefs, uses, customs, traditions, visions, and different ways of being and being in the world that characterizes each culture. As a personal competence, interculturality requires the ability to let go of prejudices and ethnocentric judgments and to move away from stereotypes, requiring openness and willingness to welcome the unknown with tolerance and a sense of otherness, in a look based on a previous search for information about cultures that you need to interact or live with.

Studying the cultural differences that contrast within a project team or in a market context is essential, not only to avoid moments of tension or even conflict but mainly to allow, based on prior knowledge, that in a serene and more possible, if respect for cultural differences can be shown (Pastore, 2015). In the context of interculturality, some elements that incorporate culture are of paramount importance, such as language and formal and informal language, daily habits related to food, clothing, forms of greeting, codes of communication, and consideration of social hierarchies, among other equally relevant aspects that should be the object of a previous study (Mainardes, Amal, & Domingues, 2010). Although the constructs already elaborated on interculturality continue to be the object of investigation and development of scientific studies with a view to a better and more consistent theoretical elaboration, it is now possible to obtain a stable consensus on what is most relevant to the understanding of the advantages of having this competence that can be used individually or collectively. In this sense, intercultural competence requires individuals to position themselves structurally or cyclically, detaching themselves from inflexible views about the world, being willing to adapt to the cultural contexts in which they will have to interact at every moment, which it does not mean, in any way, that this detachment implies giving up the values, beliefs and structuring pillars of its own cultural identity. And from the outset, it requires the ability to carry out intelligible readings of the contexts in which relationships between people or organizations from a diversity of cultures occur. In these contexts, the intercultural dialogue will only be successful if there are reciprocal efforts to avoid cultural shock or confrontation, and all cultural interlocutors must be able to engage in a relationship based on sensitivity, respect, and mutual understanding, in the face of another reality cultural presence.

It is also important to analyze the word interculturality to better understand its etymological meaning, which in the dictionary is referred to as an intermediary position, interaction in reciprocity, meeting of different people, intermediation that facilitates bridges between different cultures. But interculturality is still considered a process in which each one retains its particular uniqueness and differences in the face of diversity, in a plural dialogue of points of view culturally differentiated by cultural subjectiveness of origin. In this process, interculturality opposes any predominance or hegemonic cultural overlap (María Laura Méndez, 2013). In this context, it is also worth bringing up the thought of Vallescar Palanca (2001), considering that interculturality is based on two

pillars: the relational and dialogic dimension in which the human being coexists in a logic of alterity, positioning it. if about another, or other interlocutors with whom he interacts and who give meaning to his act of perceiving, thinking, and acting in dialogue and relationship; on the other hand, the originality of each culture emerges, which requires the rejection of acts of imposition, domination or attempts at proselytism in order to seek conversion to other beliefs, ideologies or ways of thinking, being and being in the World. According to the author, interculturality can be understood as a philosophical position in which the interlocutors in the cultural dialogue, while recognizing its centrality, seek and offer inclusion through the search for peaceful coexistence and acceptance of the diversity that characterizes and enriches the cultures in interaction.

1.4.1 Intercultural teams

As the horizon of this project is to promote penetration in markets that are differentiated by the diversity of cultures and taking into account that the value proposition implies the existence of civic awareness of environmental issues and the challenges of sustainability, equipping is useful. theoretical that helps to understand the advantages of having intercultural teams. Thus, in the multidisciplinary framework of Intercultural Studies for business, in which this project has its fundamental foundations, the contribution of interculturality within the work team that will in the future be in charge of completing the business, can be a factor critical for its success, considering that different visions coming from people with different original cultures, can bring different and, perhaps, more appropriate approaches to culturally diverse markets. It is understandable that with the advent of globalization, international relations have intensified at various levels, especially in the business world, where this intensification has been exponential. In this context, the internationalization of companies, even small and medium-sized companies, ended up driving the constitution of intercultural teams, integrating employees of various nationalities and people with different cultural backgrounds. This phenomenon aroused a greater interest in the study in academic circles and led to a more structured scientific investigation, to provide the economy, especially entrepreneurship, with more theoretical support to provide new keys for analyzing the subject. And so, from the research we started, we carried a concept of an intercultural team that indicates it as a group of individuals with different cultural identities of origin, who within the team are faced with common responsibilities regarding the results to be achieved, and the development of their tasks implies interdependence among themselves, however, they look at others and

they are seen by them as an intact cultural and social entity, being able to be integrated into different social systems, managing social relations in harmony with their cultural codes, both within organizations and outside their borders (Halverson & Tirmizi, 2008: 5). From the various inquiries and theoretical considerations resulting therefrom, it is possible to extract that teams, where there is a wealth of cultural diversity, reveal greater efficiency and better results in the pursuit of their tasks. Some of these inquiries came to demonstrate that culturally diverse teams in which interculturality works can better solve problems and difficulties related to work processes than other teams characterized by cultural homogeneity, which were subject to similar problems and difficulties within the scope of these studies (Watson & Kumar, 1993).

It is interesting and particularly relevant for this project to note that several authors claim that the best executive performance of intercultural teams occurs precisely at the level of solving problems that call for innovative solutions, based on creativity and the ability to think and do differently (Kirchmeyer & Cohen, 1992; Staples & Zhao, 2006; Watson & Kumar, 1993). Cultural differences within a team correspond to different mental models, a fact that necessarily also corresponds to different perceptions of the problems and, of course, different ways of solving them and trying to solve them, which thickens the diversity of contributions to the level of creativity and innovation.

The personal experience, as well as the networks of contacts that the members of an intercultural team bring to their interior, as a result of their cultural matrix of origin, increases the capture of "know-how", as well as more information and others ideas, enhancing critical thinking within the team (Kirchmeyer & Cohen, 1992; Staples & Zhao, 2006). Although the advantages arising from the interculturality of teams can be effectively highlighted, it cannot be ignored that these can also cause problems. From the outset, one of the problems that usually arises immediately is the fact that intercultural teams need more time for their members to adapt and fully integrate, which is a disadvantage compared to homogeneous teams. And this problem is particularly relevant for start-ups or projects in the incubation or business start-up phase. Usually more is needed time to work on internal adaptation, to avoid the clash of cultures, the emergence of tensions, or even conflicts inherent to differences in cultural values and beliefs (Mäkelä et al., 2010). In this sense, as it can be concluded, the time factor assumes in the construction of a team marked by its interculturality, critical importance, since, not being negligible, all the advantages that cultural diversity can bring to the creative process, to

critical thinking Focused on innovation and alternative solutions, the adaptation and integration time should not be excessive, otherwise the useful life of the innovation presented to the market will be compromised. In any case, regarding this specific project, given the global validity of the value proposition and the motivational foundations that legitimize it, especially concerning future environmental sustainability and given the theoretical considerations expressed here, the advantage is unmistakable. for the implementation of this project, the fact of having an intercultural team.

1.4.2 Intercultural competence as a critical factor for success in internationalization

The concepts brought to this approach about the importance of having intercultural competence within the project team, as a critical factor for the success of the internationalization process of start-ups, were the object of analysis and interpretation of the content of an essential article, developed in the scope of the inquiry carried out in the field of internationalization, which is one of the most recent publications that present a bibliography review that appears to be of relevant importance for this project. The authors in question demonstrated, through the bibliographical review they started, that interculturality is essential to accelerate the internationalization of start-ups in the act of their creation or immediately after the beginning of their activity, considering that interculturality enhances and leverages the acceleration of market penetration in cultural geographies different from that of the business origin (Cerqueira, Lamas, & Baranovskiy, 2021). In fact, intercultural competence currently assumes the condition of a critical factor for the success of the internationalization of entrepreneurship projects that need, to assert themselves and survive, from the start, or as early as possible, to gain dimension and seek to increase the scalability of its business on a global scale, gradually conquering new markets in different geographies.

Internationalization is a process that naturally faces several obstacles, among which, the biggest is culture, whose diversity poses problems that are sometimes complex and difficult to solve, such as the language barrier, beliefs, and value systems.It is important that those who lead the entrepreneurship project teams bear in mind that commercial relations in business, which are based on communication through secure channels and are guided by robust trust, a sufficiently flexible negotiating capacity and accessibility facilitator, tend to become more stable, effective and better prevail over time.

Currently, communication through virtual resources, supported by digital technology, allows interlocutors and business partners greater availability, facilitated by the potential that ICTs put at the reach of any person or organization, anywhere in the world and at any time, enjoying the possibility of being always online, always connected to the business and its partners and markets. This facility can contribute to the reduction of operating costs in business, but also shorten response times and customer satisfaction, as well as facilitate cultural opening to other different ways of thinking and acting. This possibility of permanent dialogue also contributes to helping to find, more quickly, effective solutions to problems that may arise, as they allow the acquisition of fluency and up-to-date intercultural knowledge, increasing this competence, considered by researchers in the Social Sciences, as fundamental for the internationalization of start-ups in the launch phase or in the process of acceleration. A process in which it is essential to be in possession of competence in effective intercultural communication, which allows maximum flexibility and attention to cultural details when the reality of business is marked by cultural diversity (Ting-Toomey, 1993).

It is, in fact, essential to the internationalization process of start-ups to have in their project teams people endowed with intercultural competence that facilitate the establishment of relationships with interlocutors in other cultural geographies, in which political, social, and even economic contexts comply with norms and codes marked by their cultural diversity. Integrating employees with the ability to adapt to the cultural context, with an open and flexible mindset, is currently a competitive advantage in the context of the global multicultural market, bearing in mind that cultural errors can lead to high costs and compromise business. It is important that communication takes place cordially, respecting cultural references, in order to avoid tension or even conflict, which is always counterproductive in the world of international business.

It seems consensual that the success or failure of entrepreneurship projects carried out by start-ups, or by small or medium-sized companies that intend to internationalize their businesses, depends on their ability to adapt to the different cultures and practices in force in them (Neeley, 2017).

At a time when the phenomenon of globalization is an unavoidable reality that affects the world economy as a whole, interculturality is essential to ensure the coexistence and coexistence of economic interests in territories, whether at the local, regional, national or international level. The validity of this premise also applies to business,

Today, companies cannot cease to exist with a digital presence that makes them global, a fact that being a real opportunity, it is also a challenge that involves knowing the cultural geographies where they can attract and capture new customers, new partners, and new ways to expand your business. This implies that they are prepared to deal with different mentalities and business practices. This virtual digital presence is mandatory to ensure the success of internationalization. A process that requires competence to understand cultural diversity and be able to respond to very simple questions that imply prior knowledge of who the interlocutors are, how they think and act, and how they will have to do business to be successful. There is no room for generalizations, stereotypes, or any ethnocentric approaches, otherwise, failure will result.

Intercultural assertiveness calls for an interdisciplinary approach within intercultural studies that will facilitate effectiveness in international business (Holliday, 2013). This author advocates the observation of practical cases in a bottom-up approach in the light of intercultural theory, which will allow the application of a pragmatic methodology based on reality, with his understanding that different cultural practices require evaluations, which are also practical, whether in the interpretation, for example, of management and communication processes in the diversity of cultures, or in the adjustment of tasks in these different realities. This pragmatic approach somehow integrates the DNA of start-ups that act and position themselves in a very pragmatic way, when they decide to embrace the challenge of their internationalization as soon as they are born since the development of their business and perhaps even their survival itself depends on its internationalization and adaptation to other markets and the cultures that characterize them (Cerqueira, Lamas, & Baranovskiy (2021).

In accordance with this pragmatic understanding, some practices that facilitate interculturality are described, indicating that the recognition and management of cultural diversity require the creation of an accessible and flexible communication channel that favors positive communication that facilitates the perception of how it is supposed to act the individual title and in a team context, making clear the different roles and responsibilities to be assumed, with what limits and possibilities to delegate, as well as defining acceptable standards and procedures so that there are no doubts or misunderstandings about action within the culturally appropriate team. According to the authors, to achieve this pragmatism it is necessary to undertake cultural mapping,

combining it with the recognition of the complexity of the bases that characterize the business.

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2.1Business purpose

Commercialize a technology for domestic use, to solve some problems arising from the production of organic waste originating in the kitchen and, simultaneously, allow the obtainment of a compound consisting of several nutrients that result from the process of cooking food, namely those of vegetable origin, such as fruits and vegetables.

2.2Motivation – the problem

In recent years there has been a strong adhesion of the European Union and other countries of the so-called Western World (ex.: United Kingdom, United States, Canada) to the circular economy to make cities sustainable.

However, it is still verified that many families lose 100% of the food scraps they produce in the kitchen, throwing them in the trash or putting them in the undifferentiated waste container. It so happens that the accumulation of these organic residues, leftovers of vegetables, fruits, and other biodegradable foods, when they decompose, potentiate the formation of molds and attract several insects, especially mosquitoes, in addition to producing unpleasant odors. In certain situations, combinations of different residues can create a culture broth favorable to the emergence of microorganisms, such as bacteria or even worms that represent a risk to human health. On the other hand, these wastes have an economic value that, if not taken care of in good time, will be lost, since even if they are collected for treatment in appropriate centers when they enter this circuit, they may already be in a too advanced state of decomposition, losing some of their most important ingredients, particularly nutrients that can be used as fertilizer.

2.3Business Idea

Soil Return appears to contribute to the solution of this problem. Soil Return is a small container to be installed in the kitchen that will allow the treatment of food waste produced in the preparation of family meals. It is a container that integrates a combined technology that uses concepts that are well known and tested, such as the shredder/crusher and the microwave dehydrator.

In order to guide the development of the business idea, a methodology was used based on the preparation of questions whose answers will clarify any doubts of potential investors in the project.

How can this project respond to the questions raised here?

1) By promoting its timely treatment, it manages to preserve the fertilizing value of most of its ingredients/nutrients;
2) By removing its main liquid content by filtering/draining and its moisture content by dehydration, it drastically reduces its potential to attract insects, especially mosquitoes, and simultaneously, also reduces the production of unpleasant odors, as a result of the elimination of the element of water, radically lowering its moisture content to levels that make fermentation and mold formation unfeasible.
3) It manages to preserve practically intact the economic value of food waste, which can be used to fertilize a home garden or a family garden, as it can be delivered/marketed by agreement with the waste collection center, benefiting from the economic return, either through the reduction in the bill for the waste collection service or in the direct receipt of the value corresponding to the fertilizer delivered to the central;
4) In countries facing rampant desertification and soil impoverishment, with significant losses in the fertility of their arable land with agricultural potential, this solution allows the reintroduction and circulation of ingredients that were not used for human consumption at the time of consumption, but that they can return to the production circuit and contribute to the production of new food products, helping to solve a serious problem that humanity is already facing and which tends to worsen in the future, which is, without a doubt, the capacity to feed the world population, especially in areas with soils that are poor in terms of their fertility;
5) Starting the commercialization of this technology for domestic use, the business idea foresees its scalability, developing larger equipment and capacity so that the solution is replicated, and started its commercialization for use in industrial restaurants and kitchens, thus expanding the business growth potential.

2.4Objectives

Create a business with a reasonable probability of success, based on a technological solution based on the construction of equipment for the treatment, at the origin, of organic waste produced in kitchens, which is an effective response to current consumer demands, driven by a growing awareness of its citizenship and the sense of its responsibility, concerning the environmental sustainability of the planet;

Demonstrate the benefits of purchasing Soil Return for improving the internal environment in the kitchen, given the elimination of sources that generate unpleasant smells and attract insects, together with the contribution that the adoption of this technological solution in the kitchen will represent for the circular economy and the family budget, after the amortization/dilution of the initial investment given the benefits that will accrue;

Highlight the innovative characteristics of the project and its entrepreneurial character, as a way to interest and attract potential investors to finance the idea;

Present a business model for the production and sale of equipment whose brand bears the name of the SOIL RETURN project, applying the methodology recommended in the Business Model Canva, to demonstrate to potential/potential investors, not only its economic and financial viability but above all its future profitability and possibilities of remunerating the capital invested by the project's financiers.

2.5Project concept

Soil Return

The basic concept of this project is based on promoting the return to the soil of ingredients with fertilizing value in the environment where they were produced, in entirely circular logic.

To realize this concept, it is proposed to develop equipment with the following specifications:

1. Small container to be installed in the kitchen that will allow the treatment of food waste produced in the preparation of family meals, going through the following phases:
2. Disposal of leftover food, according to a list to be made available by the consultancy in agro-food engineering;
3. Activation of the shredder/crusher function to facilitate the process of draining liquids and subsequent dehydration;
4. Submission of these residues to liquid filtration through the draining and pressing system;
5. Submission of the final mass to the integral dehydration process and reduction of waste to granulated fertilizer powder.

Technological components of the SOIL RETURN equipment:

- Container with the base system to shred and grind leftover vegetables and fruits;
- Micro-perforated drip cone;
- Wet mass compaction cover;
- Microwave dehydrator with circular tray for fertilizer removal.

2.6 Description of the Soil Return technology solution

The Soil Return solution proposes an innovative process for domestic and industrial composting. The process starts with organic matter as waste, in a sequence of operations, until an organic final product is obtained, highly nutritious (commercial value as a fertilizer), and easy to store (powder), while being easy to apply. This innovation makes it possible to take advantage of a liquid by-product, equally nutritious and useful as an organic fertilizer, as a result of the draining and drying processes, which, like the powder, is also easy to apply.

In the technical scheme shown in figure 2, waste disposal streams to the different phases of the composting acceleration process are shown, whose gains in composting times are, compared to traditional methods, radically different, from large to few weeks hours or even minutes, depending on residues and quantities. The processing begins with the deposition of organic waste in the shredding and crushing compartment, which will result in a mass that goes to the drainer, where the drainage of water in a liquid state begins until the ideal point of compaction of the wet mass is reached. , ending later in the microwave dehydrator, in which the fertilizing powder will be obtained, and the liquid has meanwhile been drained into a separate container.

The solution was developed based on rationales and focused on technological feasibility, environmental sustainability, and circular economy, in an approach that considers all the factors that, integrated with the same project, strengthen its competitive potential.

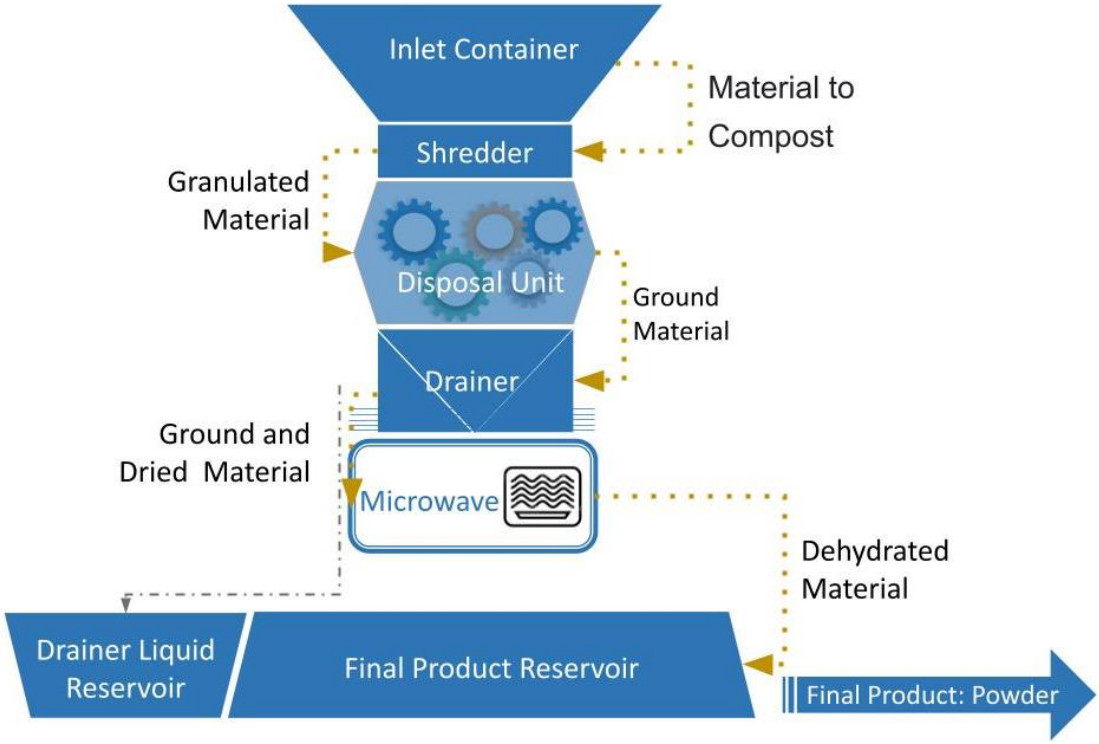

Figure 2 - Waste disposal streams, Own Elaboration

2.7Services

The acquisition of the Soil Return container will allow access to a platform with a wide range of services that help the user in his daily life in order to make him aware of the need to become a more environmentally responsible consumer whose life habits will become more sustainable.

The platform will provide Soil Return users:

- tutorials to facilitate understanding of the operation and operation of the equipment;
- information on what kind of waste can be composted and what possible combinations improve the nutrient value of the final result;
- podcasts with experts and influencers that will present communications on the circular economy, recycling, recovery, and use of fertilizer;
- several thematic tabs that refer to contents related to the underlying concepts of Soil Return;

- a discussion forum where the user community and potentially interested parties can share doubts, information, experiences, opinions, and suggestions;
- a private communication channel, where users can send messages with specific questions, within the scope of accessible and permanent technical assistance, which will be answered in a short time, in a commitment to the customer that seeks to strengthen loyalty.

It should be noted that all these complementary services to Soil Return enrich the product and emphasize its differentiation and innovation, and the business plan provides for the development of the equipment, as well as the online digital platform, to improve and, if possible, add a new one offer of services, promoting the increase of its competitiveness in the market

2.8Brand positioning statement

For entities that govern territories and regulate human interactions at a local or regional level, such as municipalities, metropolitan areas, and inter-municipal communities, which are responsible for managing the selective waste collection, recovery, and recycling, Soil Return is an individual solution that will help to solve a collective problem of appreciable size.

For families, Soil return is the composting accelerator container, which best deals with food waste produced in the preparation of family meals, promoting the return to the soil of ingredients with fertilizing value to the environment where they were produced, in entirely circular logic.

Tagline: Circular economy in the kitchen

Soil Return's positioning statement takes shape as an important and powerful branding tool for internal and external communication capabilities.

In order for all communication campaigns to be well-targeted and in line with the value proposition, it is essential to know our target market as well as the final perception of Soil Return.

Through this positioning statement, a brand message will be impactful and will captivate environmentally responsible citizens to become part of the community as loyal brand lovers.

In the process of building Soil Return's identity, it is important to follow its mission, vision, and dominant objectives, in order not to lose track of its core identity. These elements are essential to the customer engagement process, communication strategy, and marketing campaigns.

Mission

"Make each customer an even more environmentally responsible citizen."

The mission advocated for the Soil Return production and marketing project is based on the following assumptions:

- provide customers with a technological solution that makes them more environmentally responsible consumers, allowing them to adopt habits that contribute to the sustainability of the Planet;
- promote their inclusion in circular economy circuits.

Vision

"Valuing environmentally responsible citizenship and providing a solution that responds to your civic needs and options."

The strategic vision is based on the following factors:

- favoring the establishment of commercial agreements with partners managing urban waste, as a way to promote the launch of Soil Return in as many locations and regions as possible, providing technical support to these entities to facilitate its installation as widely as possible;
- approach the market by appealing to consumers' environmental awareness and enhancing the experience of using Soil Return, progressively enhancing the testimonials of customers satisfied with the equipment's domestic results, exploring the potential influence of its narrative;
- gradually replicate the best practices and results obtained to cultural geographies, through the internationalization process.

Objectives

The fundamental objectives of the project are:

- contribute to a drastic effective reduction in the waste of waste with nutrient value in kitchens;
- produce fertilizer with value and usefulness in the correction and improvement of soils;

- help families inculcate the principles of the circular economy and adhere to this more sustainable model;
- build a profitable business within the circular economy.

2.9 Analysis Description

2.9.1 PEST Analysis

For the PEST analysis carried out here, the political, economic, social, and technological reality in our country was essentially considered.

Policy:

The project comes at a political moment when Portugal is facing a crisis that will require clarification, given the lead that the State budget received in the Assembly of the Republic.

The holding of early elections, a process determined by the dissolution of the Portuguese parliament, implies that the government remains in current management for a long period, a fact that does not allow it to take legislative initiatives and adopt important policies for the country's development and growth.

We have then that the start of the project will have to face a political situation that will only stabilize after the clarification that the democratic elections will provide, reducing the uncertainty and favoring the possible predictability.

Economic:

The national economy is in a phase of absorption of the impacts caused by the COVID-19 pandemic, which was responsible for the insolvency of many companies and the destruction of many jobs, contributing to the impoverishment and appreciable reduction of the purchasing power of families, especially of the middle class. The fall in business resulting from long periods of forced closure of many companies in sectors more exposed to the contagion of the infectious agent that is at the origin of the global pandemic, putting thousands and thousands of workers in layout or even unemployed, generated a national economic reality and of unusual features.

Social:

Also at the social level, the factor that produced the greatest impact on the social reality of the country and the world, since 2020, was unequivocally the pandemic crisis. If, on the one hand, a huge wave of social solidarity was generated, on the other hand, the pandemic placed many people in a situation of social isolation, especially the older generations who were and are more exposed to increased risk. The result of this crisis across all generations and classes is a psychosocial climate marked by various adversities that will take some time to return to normality, or as it is commonly said now, to a new normal to which society will have to adapt.

Technological:

Developed contemporary societies, as is the case of Portuguese society, live heavily supported by technology, having it present in their daily lives, from the simplest to the most complex things that materialize with the unavoidable use and dependence of processors and computers, but also of a huge panoply of technological solutions to satisfy their needs, whims and social ostentation, as happens, for example, with the possession and use of gadgets. Today there is almost a kind of "faith" in the ability of technology to solve problems, satisfy needs and obtain feelings of psychic and physical well-being.

The current technological reality presents as one of the great challenges, the digitization of territories and the lives of those who interact in them.

The PEST analysis initiated here focuses on the four essential factors, political, economic, social, and technological, which constitute sides of a quadrature of the national and, to a large extent, global situational reality. In a way, these are the bases, from which the SWOT analysis starts, approaching the market with analysis keys with clear purposes, as will be seen below.

In any case, it is important to bear in mind that the pandemic has not yet been eradicated and that we still do not have enough historical distance to be able to rehearse, in short, a solid perspective on the impacts that the COVID-19 pandemic crisis has had on society Portuguese and the world, from a political, economic and social point of view, as well as at a technological level.

2.9.2 SWOT Analysis

The SWOT analysis presented here focuses mainly on the attributes of the product with a horizon in its potential market, causing effects that can positively or negatively condition its acceptance by the market.

Strength:

1) Innovative solution for the rapid reuse of organic waste

   The project is innovative, presenting an unprecedented solution, since the process of transforming food residues of vegetable origin will be practically instantaneous, a fact that puts the current composting processes, which are unequivocally much slower, at a clear disadvantage.

   Thus, for the project, the fact that its value proposition presents as an attraction a solution that provides technological innovation is relevant. An open solution that requires evolutionary development to accommodate construction upgrades and adjustment to the needs and expectations of the market, by assessing the level of customer satisfaction and feedback regarding the accessibility of technical support on the digital platform and ease of handling the equipment.

2) Offers a digital platform for after-sales support

   Digital platform - given the consumers' aptitude for innovation and taking into account the improvement and updating strategy, the online digital platform proposes to promote consumer loyalty, a set of free and open access technical assistance and support services.

   This after-sales follow-up increases the potential to extend the market from domestic use to commercial use, such as in restaurants and industrial kitchens where pre-cooked meals are prepared.

   The product has characteristics that allow it to diversify its application in other market contexts and to extend it to other countries and expand the marketing of the concept and equipment to other cultural geographies.

3) Saving the family budget and environmental improvement in the kitchen

   From an economic point of view, the technological solution that Soil Return represents, despite the initial investment in the acquisition of the equipment, will, in the medium term, become a solution that will prove to be profitable, as it will

provide users with effective savings, avoiding the purchase of chemical substrates and fertilizers to enrich the soils, as well as representing savings with the elimination of the need to purchase insecticides and aromatizers, since the sources of attraction of insects and production of unpleasant odors will be eliminated or substantially reduced in Kitchens.

Weakness:

1) The difference in equipment price compared to the price of composters

   One of the weaknesses that this project brings is the fact that traditional composting processes do not involve an initial investment as significant as Soil Return.

2) Need for electricity to work

   In competition with traditional composters, another of Soil Return's weaknesses is the fact that it lacks the energy to operate, a problem that in the future may be mitigated or resolved through the domestic use of clean and renewable energy sources produced by family level, which at the moment have not yet reached levels of energy production capable of supplying a family, supplying energy to all household equipment.

Opportunities:

1) Desertification and impoverishment of soils with agricultural suitability

   The problem of soil impoverishment is now global and also affects Portugal, in all regions, being solved through fertilization and correction, using fertilizers of the chemical origin or, in a healthier alternative, nutrients of biological and organic origin.

   There are also some opportunities for a relatively rapid internationalization and expansion to other geographies considering that they are:

   countries in the Middle East that are facing a manifest lack of arable land and serious shortages of fertilizer to produce enough food for their populations;

   other regions of the globe, where geomorphological conditions and/or excessive urban and demographic density call for efficient and effective solutions that

respond to the problems of food production, which are common and are today a concern on a global scale.

2) Growing citizens' awareness of serious environmental problems and their responsibility

It is also an opportunity, the fact that the environmental awareness of the citizens is growing. If it is true that some environmental illiteracy that poses a threat to the project persists in certain cultural geographies and even in regional and local communities in developed countries, it is no less true that awareness of the major environmental challenges that Humanity faces is currently an unavoidable reality that is awakening populations to the need to adopt more environmentally efficient and sustainable habits of life and, above all, of consumption. This awareness and acute sensitivity to the serious environmental problems that threaten the future sustainability of the Planet and compromise the future of future generations is an opportunity that opens up good prospects for business success, as well as for the development of the project and investment in its technological evolution.

Fortunately, both for the improvement of the quality of the environment and the prospects for the success of this project, in Portugal, environmental awareness and a civic sense of individual and collective responsibility have been growing in the general population, prompting consumers to rethink their behavior, habits, and options, given the emergence of serious environmental problems resulting from the predatory and exhaustive exploitation of natural resources, pollution, and climate change.

3) Environmental policies favorable to the circular economy

In Portugal, successive governments have been implementing policy measures aimed at reversing and mitigating the effects of these environmental problems, either by regulating certain potentially more polluting sectors or by encouraging the adoption of more environmentally sustainable ways of life.

There are some tax incentives in the country for investment and government support for start-ups, and investment and study in waste and the circular economy, but there is also support for projects that contribute to environmental efficiency

and the preservation of natural resources that it is important to study and explore in the interest of project development.

In fact, in Portugal, as in other countries, successive governments, pressured by public opinion, the activism of some environmental NGOs, and the strength of evidence of environmental problems, have been creating fiscal policies aimed at favoring the adoption of development models more sustainable, supporting businesses and families, through the granting of tax benefits and taxes with reduced rates for the consumption of goods or services with less or no environmental impact, as is the case, for example, with taxes applied to clean and renewable energies.

Within the scope of policies aimed at promoting environmental sustainability and the circular economy, the Environmental Fund was created and is in full operation, a body of the Portuguese State, whose mission is to financially support projects focused on the circular economy and the promotion of environmental sustainability, as well as in the protection and preservation of ecosystems and also in supporting education and environmental awareness. It should be noted that this public body, in which some of the main instruments to apply the new generation of environmental policies are concentrated, has been successively publishing numerous notices with financial support programs for projects of different nature whose ultimate purpose has, almost always, that pursue the goals of energy efficiency, protection, and preservation of Nature and environmental sustainability, and it is legitimately expectable that this project may apply for one of its priority axes, as soon as a notice covering the purposes that this project intends to follow is launched.

It is also an opportunity to predispose to public investment - in the circular economy. In fact, on the agenda of the Portuguese government and the European Union, investment in this area is already quite high, with a clear tendency to grow, driven by the need to combat soil desertification, to mitigate the harmful effects of climate change and the growth of population in certain regions of the world.

It should also be taken into account, as an opportunity, that in addition to the support arising from public policies, granted through the Environmental Fund, it is important to consider as a concrete opportunity for the success of this project,

the fact that the State, whether at the level of central administration or in local administration, specifically the municipalities, municipalities and parish councils, it has been increasingly investing in the acquisition of equipment and solutions that improve the performance, efficiency and environmental sustainability of their territories.

The current political conditions, characterized by a strong awareness of mayors about the environmental problems they have to prevent, combat, and mitigate, adopting measures and making investments in this area, effectively constitute an opportunity for the Soil Return solution.

Threats:

1) Illiteracy, misinformation, and environmental insensitivity

   Perhaps, the biggest threat is without a doubt the lack of interest, lack of knowledge, misinformation, and the lack of information that persists in certain communities and cultures given the serious environmental problems that the world currently faces, particularly the desertification of soils, either due to the exhaustive exploitation of natural resources, whether due to natural causes and, in recent decades, also due to climate change. Once these civic and cultural barriers are overcome, through information and awareness actions, carried out in cooperation with our scientific and public partners, these threats that the project will face can be gradually eliminated and their possible impact on the business controlled.

2) Low cost of direct and indirect competition

   The fact that traditional composers have a lower price and cost of obtaining fertilizer is unequivocally a threat that has to be kept under the radar of the project team.

   But from a competitive point of view, the main threat lies in the low cost of certain products of chemical origin that compete with the biological fertilizer resulting from Soil Return and, no less relevant, its greater speed in the results of the application of chemical fertilizers.

3) Uncertainty in the world economy and threat of inflation

The fluctuation of the price of services - high dependence on the fluctuation of the prices of essential services for the solution to work, such as the price of energy.

The current situation of the global economy, even in the most developed regions and countries, is currently facing a climate of some uncertainty and the threat that inflation may start to grow and create difficulties for economic growth and business in general.

4) Any technological advances from competitors

Competitors' risk may appear in the market with a similar or even more advanced solution, which could make the technology used by Soil Return obsolete in the face of a competition that is better positioned by improving Soil Return's strengths and minimizing or eliminating weaknesses of the project, presenting with new, more attractive features, actually creating a competitive threat.

5) Tensions or possible conflicts due to cultural shock

When the project enters the international expansion phase, it will have to face the threat of the most closed cultures, marked by an uncompromising defense of its systems of values, traditions, customs, and beliefs, sometimes affirmed fundamentally and radically, showing little openness to innovation and the acceptance of ideas and solutions from other cultures.

Thus, this project will have, among other challenges to overcome, to study from the point of view of cultural, social, and political diversity, the particularities that characterize these markets, to develop a marketing communication that achieves a penetration of the concept and equipment that it is successful, so as not to have to face any cultural shock, and for that purpose, the civic, ethnic, religious beliefs and business ethics systems in force in each cultural reality must be properly studied.

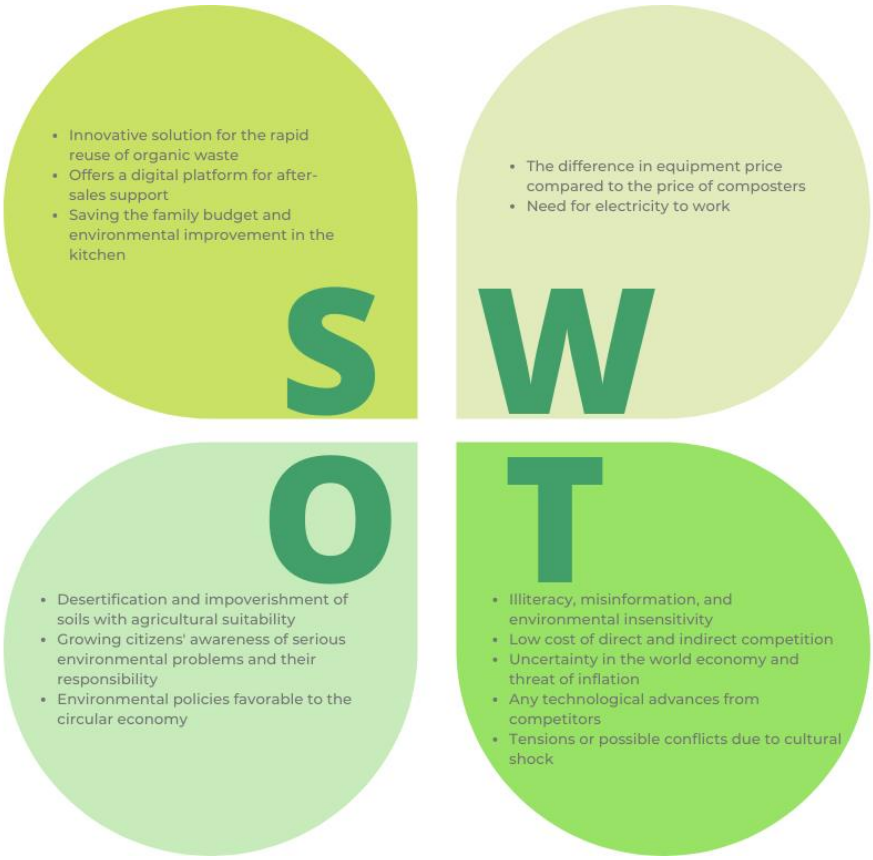

Table 1 - SWOT Analysis, Own Elaboration

2.10 Consultation of specialists and social and political agents linked to environmental issues and waste

In order to get closer to the environment and waste management sector, through a consultation carried out through interviews, the collaboration of several people whose professional activity, social, political, or civic activity was requested, to collect their views, based on their personal and professional experience.

In this listening process, a base questionnaire with twelve questions was used to obtain answers to essential themes that the project calls for the development of the conceptual idea that constitutes its fundamental object.

These interviews allowed us to consolidate not only the original convictions that gave rise to the idea of innovating in the composting process, creating a more attractive and faster technological alternative than the traditional process but also provided some useful information that revealed the concrete existence of a thirsty market for organically and biologically rich and safe fertilizers, which the current industrial production systems installed and operated by companies in the waste collection and treatment sector, such as

LIPOR, cannot meet the demands of this product whose demand is greater than the supply. An offer that is fully absorbed by the organic farming sector.

Excerpts from the responses of the various respondents were brought to the project, which is of crucial importance, highlighting the aspects in which they confirm, infirm, or diverge from each other, so that it is possible, albeit, in summary, to rehearse a perception of how the various participating interlocutors position themselves, act and interact in the context of their activity and in society.

Thus, as a methodology for the treatment of the started consultation, we present a summary of the most relevant content of the various answers to each question, and the interviews can be consulted and read in full, as they are shown in the annexe 1 that adds them as attachments.

The selection of people to be interviewed had as determining criteria their academic training and training in this area, as well as the relevance of their functions or experience, which is why the essential curriculum reference of each interviewed participant is also included in the annexes, as a way to justify the adequacy of their profile and the validity of their understandings in terms of helping to demonstrate the assumptions and perspectives that make up the rationale and proposal embodied in the project.

Thus, the 12 questions submitted for consideration by the participants are presented, as well as the essential content of their answers and their framing at the political, civic, and conceptual level, given the relevance of the highlighted aspects.

1 – What are the main threats to the Planet's sustainability?

The convergence in the essentials and the complementarity of the different perspectives evidenced in the answers to this initial question, confirm that given the gravity and dimension of the environmental problems that the planet is currently facing, as a result of "…human activity, the lack of ethics in the exploitation of resources, in excessive consumption, in the lack of care for the other… always with the logic of producing more and cheaper, it has presented an enormous threat to the planet. "(Luís Sousa - BioRumo, 2021), Humanity is living in a situation that calls for innovative solutions to solve these problems to take care of global sustainability, in the short, medium and long term. The global transversality of environmental issues and the emergence of a change of the same magnitude will be one of the evidence that will also be imposed in a globally transversal

way, a fact that will attenuate the cultural barriers that will have to be dealt with when the project enters a phase of internationalization to gain scale.

2 – Given the identified threats, how can the effects of such threats be stopped or mitigated?

The reference to values, ethical principles, mentality changes, and effective measures is entirely in line with the understanding expressed in this project, especially as it alludes to the promotion of the technological solution advocated in it, invoking the environmental responsibility of each citizen, but also "... the action and the will of political decision-makers, the unity of People in common goals, all in the sense of joining forces and, with solidarity, acting urgently on a local and global scale." (Fernando Leite - Vice President of ACR+, 2021). Given the consensus inherent in the content of the responses, it is deduced that these values are fundamental to promote a change in mentality and implement other practices in the daily lives of people and communities, such as "transitioning the linear economy (based consumption and disposal) for a circular economy based on services and solutions for the reuse of products, materials and raw materials. By developing the resources that were taken from it in the natural environment after they cannot be re-introduced into production cycles. Economic activities based on natural-based solutions should be developed, in which the production of wealth also regenerates the production of natural capital…", (Pedro Sousa-Quercus, 2021).

3 – Is the adherence to the circular economy model to the detriment of the linear economy an option?

It is demonstrated through the answers given by the different participants, that adherence to the circular economy model is much more than an option, appearing, taking into account the necessity of changing mentalities, changing behavior and consumption habits, a paradigm from which there is, for now, no escape, for lack of a better alternative, according to the vice president of ACR+, Fernando Leite, "… only with a concept of reusing materials, valuing waste as resources, will the continuation be avoided by depleting virgin natural resources, it will be possible - with the important participation of Innovation and Research - to undertake a tenacious fight against the disposable, the superfluous, and waste". This acute and growing awareness of the impossibility of maintaining the linear economy model, given the enormous environmental impacts it generates, imposes the circular economy model as a matter, not only of sustainability but

above all of survival and maintenance of the species. Human and other species of living beings on this planet." (Pedro Sousa – Quercus, 2021).

4 – In the context of the circular economy, what value does it have and what role can the use of organic waste with the nutritional value produced in kitchens play?

Given the appreciable size of the volume of organic waste produced in kitchens and taking into account its nutritional potential, which is important to preserve, recover, enhance and reintroduce into the biological cycle of Nature, according to LIPOR's expert panel "when materials are produced, they have to be regenerated in such a way as to be able to enter the production cycle several times" and for this to "look at the waste from the perspective of the resource and continue to give back to the earth what Nature gives us, bio-waste is the best example in this matter of circular economy", not assigning value to these wastes and not treating them properly to integrate them in the circular economy circuits would undoubtedly be an economic error and, worse than that, would represent yet another factor of degradation of environmental balances with strong impact on ecosystems, especially in terms of soil impoverishment. The validity of these arguments will also prove to be extremely important when replicating the scalability of the Soil Return solution, taking it to cultural contexts in other geographies, where the foresight of its benefits can be used to aid efforts to settle possible cultural difficulties.

5 – What concepts are necessary to know and apply in practice so that these residues are no longer just waste?

"The first concept is that of reasonableness and environmental awareness. We cannot accept it and there is clear evidence of the scarcity of natural resources on the Planet. All this is told to us by scientists, by more lucid political leaders, and that is why the individual action of each one of us is fundamental.

Then, we appeal to technology, Industry, scientific knowledge, Innovation, and Research, to promote actions that enable the creation of new "products" from secondary raw materials.", Fernando Leite - Vice-President of ACR+.

The participants prove, with their answers, the importance of environmental awareness, Science, Technique, and Technology, in which these disciplines can contribute to the resolution of major environmental challenges, contributing with their scientific constructs, with their experiences, innovation, and development, but also with the sharing

of good practices, both to prevent the production of waste, and to transform what is waste, can be efficiently recovered and used as a fertilizer endowed with organic value and, consequently, also with economic value. in circulation. In this sense, as the project integrates into its proposal, partnerships with the scientific community and with the public authorities that manage the territories are essential to legitimize the safety of the process and increase trust with families and companies.

6 – What precautions are necessary to ensure the safety and nutritional quality of the recovered waste, so that they can be used efficiently and produce the expected results with their use?

The perspective presented in the project is confirmed, that the awareness, training, and empowerment of users, based on knowledge and solid scientific bases, so that they can make efficient and effective use of Soil Return, is correct for this purpose Luís Sousa, from Bio Rumo, says: - "It seems important to me that there is some kind of training or awareness to the population in general, which will be motivated for this separation of organic waste.

Not all organic waste can be used, and the destination is not the same for everyone. So this awareness must exist.".

The participants also highlighted the certainty that one of the biggest challenges of the project in the context of internationalization in different cultural geographies will be precise to adapt awareness and training to their cultural system, providing information on the care to be taken to protect the health of those who use it. and then consumes these products, as Pedro Sousa of Quercus recommends, "The care will be to optimize the nutritional and energy quality that these residues can maintain until they are returned to the ground, ensuring the hygiene, safety, and health conditions of the people. that interact in the process.".

7 – What advantages do natural fertilizers produced from organic waste have, compared to others on the market that are produced by other processes and with other raw materials?

As mentioned in the project in several texts, the comparative advantages of organic fertilizers that result from cooking food in kitchens are unequivocal, as stated by the participants in this consultation, because they do not incorporate any chemical substance in their manufacturing process. Confirming this reality, the Vice-President of ACR+,

Fernando Leite, maintains that “To begin with, when referring to the “natural” characteristic, here we exclude any addition of chemical products/materials.

A natural organic compound, such as LIPOR's NUTRIMAIS, can be used in the organic production mode, thus allowing the subsequent consumption of fruits, vegetables, aromatic and medicinal herbs, by publics who, for medical reasons, or choice of life, demand biological products. The products that can be manufactured using chemical fertilizers have this notorious difference, which is that they have chemical products in their constitution, some of which are not beneficial to health.”. There was a consensus that biological fertilizers work better in soil fertilization and do not pose the same risks to human health as are known for the chemical ingredients used in synthetically produced fertilizers. And this is a scientific argument endowed with enormous civic, social, and political force, which easily gathers a better adhesion to the technological solution presented here, in more closed cultures and where barriers may be greater from the outset.

8 – If residues are produced in a domestic kitchen, the recovery of which allows the production of a natural fertilizer that exceeds the needs of a family, to restore the balance of the soil in your small vegetable garden or garden, is there a market for its commercialization?

The agreement of the respondents to the interview is very clear as to the existence of a market for the sale of organic natural fertilizer originated in the kitchens, as Fernando Leite, Vice President of ACR+ unequivocally recognizes: -“Completely. Products of biological origin are highly sought after and there are several ways in which they can be sold, shared, always for the benefit of users.”, LIPOR specialists also add that it is viable “…to fertilize vegetation cover or for organic farming…”, by On his side, Pedro Sousa, from Quercus, reinforces “In my opinion, yes, since there is currently a huge market for the use of synthetic fertilizers that can be replaced by natural ones, plus a great reduction in the ecological footprint inherent to their production. Many soils are currently not being fertilized due to the high economic and environmental cost inherent to synthetic fertilizers.”.

However, we cannot hide the reservations placed on the feasibility of collecting and distributing surplus domestic production, an observation that makes perfect sense, as Luís Sousa, from Bio Rumo, says, “…the logistical cost of domestic collection, door to door, excess production, is too high and difficult to make this collection environmentally and

economically viable. One possibility would be to set up a solution to collect excess production, in a more community way.". However, it is important to emphasize that, in municipalities where the selective collection is more advanced, with a well-structured and quality service, with regular turns, the assembly of a fertilizer collection circuit already processed at origin and delivered in powder, properly packaged or even delivered in a small container with a lid, to be transshipped to a bulk shipping container, it does not appear to be a complex operation from a logistical point of view and has the economic potential to generate profitability or to ensure the satisfaction of the cost structure of the operation. , as well as to give back to families or companies in the catering, hotel, or similar sectors. On the other hand, in cultural geographies where collection does not yet exist, the use of Soil Return for family use or local application in the community may be an argument of strength, especially when the need to correct or fertilize the soil proves to be an emerging need to combat desertification or improve food production to meet local needs.

9 – Composting is a recovery process that has been gaining more and more adherents, will it be possible to develop this technology so that families living on the horizontal property can also adhere to this solution?

The sharing of common sense opinions is an indication that the concern with the use of biological waste is transversal and seen as a solution that works in apartments in densely populated urban areas. Fernando Leite says that "…in addition to community gardens, where families move to "work" the land, we have options for using flower boxes (of different sizes) that can be installed on balconies, and where vegetables and flowers are produced, and other products, all in line with the space available.". In order to reinforce this understanding, it is mentioned "The door-to-door garden project, for example with great availability of space and an important commitment by Lipor, allows the inhabitants of Greater Porto (including those who live on the horizontal property) to take advantage of the product of this process.", Luís Sousa - Bio Rumo. Quercus representative in northern Portugal, Pedro Sousa is adamant in considering the "…composting process is too intrusive to carry out inside the house, either because of the odors generated and insects associated with the process or because of the cost of space. So the solution presented by Soil Return, I think, solves these two problems, and can be a great motivator for new adhesions, especially if families are supported at the time of their acquisition.". Although the participants converged on the referral of community composters,

confirming the need and possibility of setting up this response for families living in apartments in horizontally owned buildings. These understandings also demonstrate that the Soil Return solution is a good solution to install in an apartment, considering not only the various options that the project provides in terms of choosing equipment of adequate size for the space available at home, but also for the comparative advantages that Soil Return from the point of view of hygiene, the environmental quality it provides, eliminating points of attraction of insects and the formation of bad odors and fermentation processes and the appearance of molds. The Soil Return solution appears to be a good alternative to traditional composting, especially in large cities, particularly in countries facing excess population, impermeability, and impoverishment or desertification of soils, facing serious difficulties in feeding satisfactorily and safely, it's the entire population.

10 – Can dehydration of organic waste in a domestic context be an environmentally and economically viable solution?

It is also verified in this matter, the unanimous agreement of the interviewees regarding the economic viability of organic waste. The Vice-President of ACR+ says that "There are studies and experiences that go in this direction…", but Fernando Leite nevertheless affirms his preference for "…a natural, non-forced composting, which allows a good transformation of materials into a compost of excellent quality, free of charge. All other solutions normally entail other costs, such as energy, maintenance, etc.". In agreement with the feasibility raised, Luís Susa understands that "The great advantage of this type of solution (dehydration of organic waste) has the enormous advantage of allowing something (product with nutritional value) that citizens can enjoy in their homes, in its gardens, …".

Regardless of the essential convergence regarding the economic viability of the production of organic waste, it was not clear to the participants in the consultation that the proposal embodied in the project will not compete with the business of marketing organic fertilizers that the operators of urban waste collection they are already exploring, since the idea is, precisely, to supply surplus domestic production to these operators, so that they can control and certify the quality of the product resulting from the Soil Return solution and integrate it into their business. In turn, the doubts about the liquid by-product resulting from the process that takes place in the Soil Return, it is important to take into account that the amount will be proportional to the amount of solid waste submitted to processing and that, as it has also nutritional value, it is not supposed to send this liquid

for the basic sanitation network, therefore, there will be no need to adapt the network or the WWTPs.

11 – What advantages and disadvantages do you see in the installation of equipment in kitchens that grinds, drains, and dehydrates leftovers of vegetable food?

The Vice President of ACR+ places reservations and expresses his personal opinion, expressing himself thus: “I am not particularly adept at this methodology, although I recognize that in some countries (eg USA) it is used. The kitchen is the “sanctuary” for us to prepare food and not the “attachments” and public places where, yes, other tasks can be carried out such as homemade composting.”. Another interlocutor with reservations justifies his point of view alluding to the “…reduced size of many of our kitchens.”, Luís Sousa-Bio Rumo. In a pragmatic approach, the specialists who were part of the panel of interviewees at LIPOR, admit the economic viability “…if the municipality provides selective collection…”.

The lack of full knowledge of the content of the project explains the emergence of doubts and reservations about the delivery of the two types of fertilizer produced by the Soil Return solution, one content being produced in powder and the other in a liquid by-product. Pedro Sousa from Quercus, puts the issue on both sides of the scale, saying that “The advantages are clear, such as the reduction of odors, insects, and space. The inconveniences will be the adaptation of the canalization so that the liquid waste for the basic sanitation network and the capacity of the existing WWTPs are properly dimensioned to receive this increase in waste.”.

However, it should be noted that the reservations placed on this issue are, in a way, answered by other answers given by the participants and by the project itself, both in terms of space limitations inside the family kitchens, and in what refers to the obvious advantages related to the environmental improvement inside houses or even outside, when compared to the efficiency of Soil Return with traditional composters of slow anaerobic digestion, which results from the degradation of waste that decomposes and transforms into organic fertilizer, in which it is necessary to regularly control the occurrence of smells, the attraction of worms, insects and living organisms, which are not essential to the process and, on the contrary, are harmful and represent a risk to health, which must be monitored, prevented and mitigated.

12 – Given your experience and knowledge, do you believe that families can adhere to the separation, treatment, and recovery of organic waste where it is generated? If so, will they do it more for economic or environmental reasons?

Between environmentalist motivations, concerns about the present and future sustainability, and financial motivations, it can be considered that there is a relatively balanced consensus. Fernando Leite from ACR+ shares a very clear opinion - "I strongly believe in common sense, in the environmentalist vision of citizens who will always seek to see a problem as an opportunity, and it will not be economic motivations, but aspects of environmental protection that will motivate such behavior. ", but in opposition to this more optimistic point of view, we have a more reticent outburst about environmentalist motivations - "Unfortunately it remains easier to convince citizens to change behavior based on economic reasons, than for environmental reasons… the Environmental reasons are important for current generations, but also future ones.

As we know, "there is no Planet B", Luís Sousa - Bio Rumo. Returning to the pragmatism and trust of the experts on the LIPOR panel, who cautiously state - "yes we believe in environmental motivations but it is an arduous path… it is necessary to adapt the solutions to the expectations of the families…". Invoking practices that were already part of the daily lives of those who in the last century had these practices, remembering that "...this was a habit practiced until 50 years ago and if there are motivating factors and awareness, I think that quickly many people will adhere and recover this habit. I think they will do it first for environmental reasons and later for economic reasons if PAYT waste management methodologies are implemented in their regions.", Pedro Sousa – Quercus.

As can be seen above, the specialists essentially agree with the vision that the project demonstrates, a fact that allows us to have reasonable expectations that the promotion of the Soil Return technological solution can and should be promoted, either by raising awareness and appealing to awareness. and environmental responsibility of consumer citizens, public institutions, and companies, such as through advertising their economic advantages and contribution to the quality of life in homes and, specifically, inside kitchens. Paradoxical as it may seem, in the cultural geographies of the most populous and less developed regions, there are reasons to believe that, although economic issues have a great preponderance there, it is expected that environmental issues, when the object of good communication, with serious information and a well-structured awareness, could be much more boosters of the adhesion to this technological solution to speed up the

composting process and easily produce an organic fertilizer whose usefulness in the correction and enrichment of the soils will be understood without difficulty.

2.11 The Business model canvas

2.11.1 Value Proposition

Although today there are already alternatives to reuse domestic biowaste, they have not yet reached the desired size, which is probably due to the slow pace of these transformation processes into organic compost endowed with fertilizing value and, consequently, also economic value, although still relatively low or residual. The solutions currently available are interesting when the transformation process can be subject to industrialization, allowing to obtain quantities capable of commercialization in the agricultural market, especially those dedicated to biological agro-food production.

The idea of this innovative product: Soil Return, has the environmental objective of returning to the earth, in an easy, fast, and effective way, what came from it.

Soil Return is a device that presents an attractive value proposition to the market:

- Innovation

  The technology that Soil Return incorporates is innovative, bringing to the kitchen equipment that will help bring about a change in the way organic waste is handled, improving the environment inside the kitchen, and improving hygiene conditions through the elimination of outbreaks attraction of insects and living organisms potentially harmful to human health.

  The electronic component of the Soil Return includes a wireless communication module that allows communication with the Soil Return digital platform and interaction with the APP SR, to remotely manage the main features of the equipment and its programming in harmony with the specific needs of each consumer.

- Customization

  Soil Return presents itself on the market with the possibility for the customer to customize their option, choosing the equipment that best suits the availability of free space in the kitchen, the ability to process organic waste that you want, and

the color of the equipment. select from a palette of 6 available main colors (white, pearl, black, brown, gray, and silver chrome). In addition to these possibilities, you can also fine-tune the customization of your equipment and request another color out of this palette, which will have a small additional cost.

- Status

  For the most demanding customers, it is possible to develop furniture in fine woods with an exclusive designer design and studied in loco in the customer's kitchen, so that the Soil Return equipment is perfectly integrated into the kitchen's interior architecture without clashing or creating reasons for visual noise.

- Risk reduction and safety improvement

  Soil Return is not just another appliance for the kitchen, it is mainly a technological solution that will help to solve an environmental problem inside the kitchen, reducing the risks of contamination in food preparation, through the elimination of potential culture broths for the development of germs, bacteria, and worms that threaten the health of family members, as well as through the elimination of insect attractors and the production of unpleasant odors.

  Soil Return will contribute to improving food safety in kitchens, eliminating or reducing biological risk factors generated in the preparation of meals.

- Reduced costs with cleaning and maintaining the fertility of home gardens and gardens

  With the gains provided by obtaining biological fertilizer produced in Soil Return, the expenses with the purchase of fertilizer to fertilize home gardens and gardens can be drastically reduced or even eliminated.

  The same result can be achieved about spending on cleaning kitchens and eliminating unpleasant odors.

  It should be noted that, in addition to the possible savings, Soil Return will make it possible to avoid the purchase of chemical products that are usually adopted as a solution to satisfy the two needs identified above.

- A useful solution to the environmental sustainability of territories

The Soil Return solution offers municipalities, inter-municipal communities, and public companies operating in the urban waste sector, a strong contribution to the pursuit of their strategic objectives regarding the public purpose that today all these entities integrated with the scope of their public mission, the environmental sustainability of their territories.

The large-scale installation of the equipment, in the homes of the territories under the administration of the municipalities, will bring gains in terms of the public reputation of their environmental policies and, at the same time, will allow the domestic production of biological fertilizer produced using Soil Return to gain dimension to apply the logic of economy of scale, undertake the setting up of a fertilizer collection system and promote its use in local agro-food farms with exclusively organic production.

Furthermore, by promoting the widespread installation of Soil Return, even in urban areas heavily dotted with horizontally owned housing, municipalities can increase the domestic production of aromatic herbs, some vegetables or the promotion of floral beautification of balconies and gardens, thus how they will be able to increase an incentive policy for the installation of vertical coverings and coverings made of vegetal cover to improve the thermal and acoustic efficiency and the waterproofing of buildings, fertilizing these alternative crops with the transformation of organic waste produced in the kitchens.

- Improve efficiency in the reuse of organic waste in industrial kitchens

  Soil Return presents industrial-scale catering, hotel, and kitchen professionals with a value proposition based on the effective improvement of efficiency in the treatment of organic waste quickly and in good time, to preserve the nutrient value as much as possible. of its ingredients and, consequently, improve the economic value of the biological fertilizer substrate that can be obtained through the process that the use of Soil Return provides.

- The Soil Return solution allows you to assert environmental responsibility and ethics

  The Soil Return equipment, in addition to being in line with current market trends, in responding to the new needs of consumers who are aware and concerned about the serious environmental problems that afflict Humanity, improves its reputation

in public opinion in the surrounding social environment. Having an environmentally sustainable solution helps to convey a positive message to society regarding the sense of responsibility and environmental ethics in business. Additionally, but not less important, having a technological innovation that facilitates environmental sustainability is an interesting competitive advantage for those who join the equipment distribution and marketing network.

- Price

  The commitment offered to the customer in the price/quality/utility ratio of the technological solution presented to satisfy the various needs identified is reasonable and accessible to a wide range of families in the so-called middle class, being in the market accessible to different levels from the lower middle class to top of the economic-social pyramid.

2.11.2 Customer Segments

National market

Institutional clients:

- City councils;
- Associations, communities, and inter-municipal companies that explore the urban waste sector;

B2B:

- Catering sector and similar;
- Hotels and industrial kitchens (installed in hospitals, schools, prison establishments, etc., usually concessioned to companies providing this service);
- Agri-food industry (especially the industry that exploits the processing of pre-cooked meals).

B2C:

- Families;
- Unique customers.

International market

(When moving forward with the project's internationalization process, the market segmentation will be similar in every way)

2.11.3 Customer Relationship

Since the municipalities will be strategic institutional partners, the holding of workshops, demonstration events, and dissemination of the Soil Return product concept will be a reality, as a way to implement a network for sharing information and technical training, involving policymakers and technicians who at the local level have effective responsibilities in the environmental management of the territories. These networking initiatives will be maintained regularly, supporting the planning of home distribution whenever agreements and contracts are signed with the local authorities, while the project team will also be responsible for raising awareness and training families for the use of the equipment. These networking events and information and training initiatives will preferably be held in the territories and occasionally via streaming.

In turn, the forum that will be created and will function on the digital platform will be a space for dialogue and permanent contact between users and partners, allowing for the increase of sharing relationships between everyone, facilitating communicational proximity, and strengthening stable and lasting relationships that will help to create a sense of belonging and identity that will contribute to the loyalty of customers to the solution, making them brand ambassadors and main promoters of its success, by sharing their concrete experience in using Soil Return.

Thus, the relationship with the customer is of crucial importance for the success of the entrepreneurship project. Investing in an excellent relationship with the customer is essential so that you can positively influence your experience using Soil Return.

In this sense, a type of relationship will be applied to each previously defined segment, guiding the main objectives, with the families being the main focus, to ensure that they adhere strongly to the installation of Soil Return in their homes, whether for reasons environmental or out of interest in integrating the concept of the circular economy, in the hope of taking economic advantage from it.

To always maintain a close relationship, we will focus on the type of relationship that promotes the sharing of information and experience within communities, as a strategy to promote involvement with current and potential users, stimulating interaction and

creation of bonds between people through social media, to increase reciprocal influence between interlocutors.

In this way, users will feel part of the solution, sharing knowledge and experience, helping each other solve problems and clarifying any doubts, reinforcing their identification with the environmental sustainability purposes and the benefits of using the Soil Return.

The user is seen as a partner, in addition to liking the product, he identifies with the brand and the environmental and sustainability values that are associated with it, developing personal pride in the conduct of environmentally responsible citizenship, being able to voluntarily become an influencer of relief, which makes a point of recommending the Soil Return for all that the equipment represents and says about its environmental awareness.

As mentioned above, through a strategic program to create and maintain a networking network, networking relationships will be promoted and increased among Soil Return users, involving in this process, influencers, environmental organizations, and municipal technicians in the area of the environment, of the inter-municipal entities linked to the waste sector, journalists and staff of the project team, to strengthen these networks and create and developing a spirit of community around this solution for transforming food waste into a socio-environmental movement with a character of a community that shares common values, responsibilities and environmentally sustainable options.

In this sense, different means and channels will be used, particularly social networks, to promote events and increase the sharing of experiences and points of view around essential themes. Additionally, an incentive system will be created, with benefits and advantages to be attributed to the participants in the networking actions.

2.11.4 Channels

To reach our target audiences, a communication strategy focused on the user was designed, considering the best channels to communicate directly with them,

Gradually, it will evolve, in a logic of using joint communication between traditional and digital channels, using the main social networks, Podcasts, and content for easy digital dissemination, until reaching the outdoor media, to consolidate the statement of the brand in the territories where the project intends to expand.

Awareness:

In the first stage, framing the concept of our project in the behavioral paradigm shift, so necessary to respond to today's environmental problems, we will make known the existence of our brand as well as transmit our value proposition to our target audience, through marketing campaigns on social media, digital communication channels and later through billboards.

Evaluation:

At this stage, users will already know about the product and we will be in a position to assess its receptivity, seeking to understand which motivations and arguments they are most sensitive to, whether to environmental issues and future sustainability, or economic reasons.

The value proposition will be brought to the attention of the market through a communication strategy based on the activation of emotional concepts that refer to the absolute value of human life and its dependence on habits and the impacts they can have on the quality of life and health, but also the family economy and the balance of ecosystems.

The customer can form a consistent opinion, evaluating the Soil Return product, as a result of their personal experience, against what they have read, seen, and tested using the equipment directly.

In this sense, it is important to carry out brand activations, promoting demonstrations in which the customer can produce his fertilizer, introducing organic waste, and personally operating the equipment.

Purchase:

The strategy so that the purchase of Soil Return can be easily acquired, so that its commercialization grows sustainably, to support investments as soon as possible, will be based on a price policy leveraged by quantity. In this sense, institutional or business customers who do business with quantities that facilitate the production of equipment, applying an economy of scale logic that allows for better cost control, will benefit from special advantages and discounts.

Families that associate by affinity to buy as a group, as well as condominiums that buy for all or most of their owners, will also benefit from an incentive policy with special discounts.

For families who only want to buy a single Soil Return unit, they will be able to pay in monthly installments, benefiting from the agreement with our banking partner, with which we will establish agreements, negotiating financial conditions that are as advantageous as possible.

Delivery:

The strategy for delivering value to the consumer is based on the proposal defined in the project and can be updated and improved, depending on the periodic evaluation, carried out through a questionnaire to try to understand the degree of satisfaction with this indicator.

After-sales:

The strategy of follow-up and customer assistance in the after-sales will essentially involve the digital platform, creating a strong connection with the user through the channel that guarantees the reservation of their privacy, but also facilitating, if you wish, their integration and participation in the Soil Return user community.

Through dynamic, interactive, and bidirectional communication, rich in image and with magnetic content, created in a simple, clear, and inclusive language, we will seek to establish stable and lasting loyalty bonds, leading users to recognize themselves in the values promoted by the project and be its biggest advocates and advocates.

2.11.5 Key Activities

The development of the value proposition focuses on the main activities, in order to describe the practical tasks that the product needs in order to achieve its business purpose, achieve target audience segmentation, establish and maintain customer relationships and generate long-term revenue.

Thus, it is divided into these different categories:

1) Production

   This includes the design phase, manufacture of the Soil Return, and distribution.

At this stage, using specific technologies, Soil Return begins to take shape.

The production of Soil Return involves techniques that will ensure the effectiveness and efficiency of the product and its use. Since the various components of the equipment, previously manufactured, from metallic, electrical, and electronic components, will be assembled in an assembly line that will sequentially incorporate each of the pieces, until the final finishes.

In the first phase, the equipment will be distributed based on partnership agreements with the local authorities, with which contracts will be established with privileged conditions, taking into account the expectation of carrying out sales with them that will allow discounts in a logic of economy of scale, which will allow the project team to better plan the production of equipment, also taking advantage of this economy of scale, to control costs.

At the same time, distribution for commercialization in the commercial circuit will begin, approaching the major distribution brands of home appliances and hypermarkets, especially in regions where local authorities do not have supply agreements/contracts.

In a phase immediately afterward, the international commercialization will begin, taking small but safe steps, so as not to take wrongly calculated risks.

2) Problem-solving

The project team will create a technical assistance center, with properly trained and trained professionals, either receive equipment that eventually arrives at its destination with any problem in its functioning or manufacturing defect, as well as to solve and repair damages resulting from poor use or caused by factors related to factors external to the equipment itself.

Additionally, there will be a separator on the Soil Return platform to clarify doubts of any nature, whether related to the use of the equipment, as well as others inherent to waste and the process of transformation into biological fertilizer. A tab will also be available on the platform with all the information useful for the full training of users. In addition to the information available on the platform, there will be an email channel dedicated to obtaining information that will be provided in a personalized way, as well as a toll-free telephone line for domestic calls and

another one specially dedicated to international calls with service in English, French, Spanish, and German. This linguistic offer will be expanded as the business expands to other cultural geographies. The technical assistance and after-sales team will have regular multidisciplinary professional training, to always maintaining high levels of technical and communication skills, as well as their motivational level.

3) Networks

Through a strategic program to create and maintain a networking network, networking relationships between Soil Return users will be promoted and enhanced, involving influencers, environmental organizations, municipal technicians in the environmental area, inter-municipal entities in this process linked to the waste sector, journalists, and staff of the project team, to strengthen these networks and create and developing a spirit of community around this solution for transforming food waste into a socio-environmental movement with the character of a community that shares values, responsibilities and common environmentally sustainable options.

In this sense, different means and channels will be used, particularly social networks, to promote events and increase the sharing of experiences and points of view around essential themes. Additionally, an incentive system will be created, with benefits and advantages to be attributed to the participants in the networking actions.

2.11.6 Key Resources

In project planning, forecasting the resources needed for the start-up phase of the project comes down to the essentials.

Human Resources

Constitution of the project team:

1. Entrepreneurial leadership

   Leadership is the responsibility of the entrepreneur, who in this specific case is the person who conceived the innovative solution, conceived the business idea, and prepared the project. You are responsible for leading the entire team, carefully chosen by you, in compliance with a previous definition of profiles, established based on requirements for adequate training for each function, personal and

technical competence, talent, and natural predisposition to work in a team. It is up to the leader to communicate their ideas clearly and promote debate around them, motivate the team and stimulate creativity and innovation, inspire self-confidence, signal deviations arising from inefficiencies or problems of understanding or difficulties in interpersonal relationships, celebrate all-important victories, launch challenges and explaining the goals to be achieved and taking care of internal cohesion, especially if the cultural diversity within the team has a dimension that requires particular attention.

2. Technical direction

   The technical direction and coordination of product innovation and development is the responsibility of the Electromechanical Engineer, who is responsible for preparing the technical drawings, diagrams, and flowcharts, as well as the mapping of industrial production needs and planning. Additionally, it is also responsible for participating in the process of defining the profile and skills required concerning the future hiring of new technicians for this area, to avoid casting errors in the selection of candidates.

3. Marketing and communication

   It is up to the person in charge of marketing and communication to prepare a marketing plan and a communication plan that will include the definition of the strategy to be followed to spread the essential messages of the entrepreneurship project, but also to raise awareness and promote the Soil Return solution. In parallel, it will also be responsible for drawing up an intercultural communication plan, defining a communicational approach adaptable to the diversity of cultures to which the project will expand when internationalization begins.

4. Administrative and financial direction

   The responsibility of the administrative and financial director in the company's organization and investment fundraising phase to leverage the project's start-up is to define the documental and administrative management model and to establish internal procedures for budget projection, financial programming, and control.

5. Commercial direction

   The commercial director, at this early stage of the project, is responsible for defining a strategic plan for the distribution and commercialization of Soil Return, first in the domestic market and once its scalability potential has been tested, project its distribution and commercialization, establishing in conjunction with

the leadership and the financial direction, the sales objectives to be achieved in each of the phases.

The team with which the project starts will be the nerve center of the entire business and may grow as the best expectations are confirmed and investors intensify their confidence, translating it into the reinforcement of project financing so that its development occurs in a stable and sustained way.

To explore the differentiating potential for the development and internationalization of the project, which is conferred on it by having a work team characterized by its cultural diversity, an integration policy will be adopted.

In this sense, the mission, vision, culture, values , and objectives will be shared with the entire team, so that all its members align with the project's purposes, making this sharing an inclusion factor for the common pursuit of the goals to pursue.

To strengthen cohesion, the strategy for full integration in the context of cultural diversity, creating several moments throughout the workweek to promote social conviviality, companionship, the exchange of knowledge about the different cultures in presence, increasing the sharing enriching experiences, through the tasting of gastronomic specialties from different cultural origins, as well as the dissemination of musical and artistic traditions and other forms of expression.

The implementation of this intercultural inclusion strategy aims to achieve the following results:

- Increase the team's creative talent

  By promoting the sharing of views, experiences, and life paths marked by a culturally diverse education, we will increase the swarm of creative ideas and a greater variety of problem-solving possibilities, thanks to the diversity of culturally diverse perspectives that will emerge.

- Increase productivity levels

  By facilitating the free expression of the diversity of thought of the different members of the work team, who will look at the processes and ambition for results, from their original cultural background, they will be more likely to obtain innovative, transformative, and disruptive ideas that can boost productivity very significantly.

- Enhance the team's reputation

  The dissemination of good practices of inclusion and intercultural integration within the project team, as well as the efficiency and effectiveness of its work

processes and results, will be a way to strengthen its reputation in the markets in the various cultural geographies where it intends to take the Soil Return.

- Increase availability for intercultural dialogue, prevent tensions and conflicts
  Make the good practices established within the project team a positive and inspiring example that generates empathy, trust, and credibility, favoring the social climate in the workplace and curiosity, interest, and sympathy in potential markets, facilitating the promotion of the virtues of solution advocated by the project.

Material resources

Installations

In an initial phase, the project lacks an open space where the team will meet to work on the project launch, planning all start-up activities, and defining the features and design of the planned platform to allow interaction with future users. The team will also be responsible for the assembly and a workshop to carry out tests and the assembly of a prototype whose components will be ordered to be executed externally by different suppliers.

After this phase, negotiations will begin for the lease of facilities with dimensions and conditions for the production of chassis, metal parts, installation of the electrical system, and general assembly with the integration of electronic components.

Financial resources

The project will start with the essential financial resources for the development of technical studies and the essential tests necessary to demonstrate its environmental, technological, economic, and financial viability.

Once these studies have been carried out, a round of contacts and negotiations will begin with investment funds and Portuguese economic groups with a vocation to invest in innovative entrepreneurial projects, to obtain funding to leverage the project's implementation. For this purpose, the inspirational and know-how support of a business angel will be requested.

2.11.7 Key Partners

In order to promote the permanent adaptation of Soil Return to the needs and dynamics of the market, a program of strategic partnerships will be developed with the scientific community that, within the Porto and Transmontana academy, is competent to provide innovative technological solutions, but which can also provide support, transferring

knowledge in fields such as electromechanical, electrotechnical, electronics and computer engineering, as well as in the field of biology and agricultural sciences. These partnerships are important to guarantee the quality of the products to be commercialized, but also to guarantee the efficiency of the biotechnological process that the Soil Return equipment will provide to users, in the transformation of organic waste into biological fertilizer. On the other hand, this partnership with the various colleges and researchers of the University of Porto (UP) and the University of Trás-os-montes and Alto Douro (UTAD), allows us to keep the project in progress, counting on the institutional cooperation of these universities to develop and test upgrades and improvements in the construction of the brand's equipment. The partnership with UP and UTAD will be equally useful, to strengthen with scientific support, the selection criteria for food waste that can be transformed into biological fertilizer effectively endowed with nutritive value for soil correction and, above all, safe for the biological point of view, in order to avoid risks of chemical contamination.

Given the environmental values called for in the project's communication, namely the issue of environmental responsibility of citizens and communities and taking into account the concrete contributions that the use of this technological solution can make to the preservation of the environment and small domestic ecosystems constituted by family or social biological gardens and also through gardens, flowerbeds or vases with aromatic or ornamental plants, partnerships will also be established with organizations whose public mission also includes raising citizens' awareness for the adoption of environmentally responsible and sustainable behaviors and attitudes.

At a later stage, after the project is sufficiently consolidated in the market for domestic use, it will move towards establishing partnerships with municipalities and inter-municipal entities that take care of the selective collection of waste and already process organic waste, transforming it into biological fertilizer, as already happens with LIPOR, which manufactures NUTRIMAIS from food waste. These partnerships will be carried out to contract the collection and marketing of surplus fertilizer produced in the domestic environment or in industrial restaurants and kitchens when the project is in this expansion phase. It should be noted that these partnerships will be, at this stage, essential to allow the scalability of the project and to give it sufficient size to take the product to international markets in the catering and hotel industry.

In terms of implementing the communication strategy, partnerships with a selection of proven influencers in the defense and promotion of more sustainable environmental values, attitudes, behaviors, and options that contribute to the preservation of Nature and ecosystems, assume additional importance for a better perception of the project. The selection of these influencers will be done carefully to guarantee a partnership with those who have high reliability of their followers and a high level of engagement and a strong relationship with the environmental theme.

2.11.8 Revenue Streams

The main source of income will be the sale of the product, with an estimated financial income arising therefrom in the order of €78,000.00 in the first year, a value that takes into account the fact that it is a grace period, these financial projections can be consulted in annex 2.

However, another source of revenue generated will be through the online platform. Although this is completely free to access, advertisements and sponsorships will be presented in the podcasts available on the platform, especially from institutional partners interested in disseminating messages and awareness programs to promote a change in mentalities, behaviors and habits, with the strategic objective of combating the causes of climate change, desertification and degradation of natural ecosystems and combating the loss of biodiversity, in addition to other campaigns related to sustainability and environmental responsibility, as well as circular economy and green economy. Among the potential clients will be institutes and public bodies whose mission is directly related to the environment and the circular economy, but also municipalities that already have selective collection systems for urban waste in place. The commitment to be made with space buyers in this communication channel to spread their messages and content is that the revenues collected from the sale of this space will be exclusively used to invest in innovation and project development, as the main business of the project is the production and marketing of Soil Return.

<u>Financing source</u>

The project will be funded at an initial stage in two ways:

1. With its financial resources;
2. Through a bank loan.

At a later stage, when the ideas are already implemented, tested and sufficiently credible, allowing to approach the financial market in demand from investors, with the entrepreneurship project defended by the start-up which has been set up for the purpose, it will advance to the round of contacts with potential investors to obtain financing that will allow the project's scalability to materialize and give it the necessary dimension for its internationalization and expansion into other markets in other and more distant cultural geographies.

At this stage, other sources of funding will be sought, such as:

1. Portuguese economic groups with financial resources to invest in start-ups and entrepreneurial projects with high potential for innovation (for example Sonae, Jerónimo Martins, RAR, Sociedade Ponto Verde, LIPOR, Ferrovial, etc);
2. Foreign investment funds with great availability of liquidity and with a desire for projects of this kind.

Current Revenues

Expected current revenues will come primarily from the sale of equipment

Revenues collected from the sale of advertising space on the platform are considered extraordinary revenues

2.11.9 Cost structure

The cost structure, presented in annex 2, can be segmented into:

Cost Drivers

The company will invest in the adoption of cost control methods with a view to its constant reduction and optimization, increasing the reengineering of processes, whether at the administrative, economic-financial management, innovation and development and production levels. This proves to be more profitable and advantageous, in the outsourcing of all services and processes in which it proves to be more efficient, productive and cheaper than maintaining them in-house.

Value Cost

Focus on generating value for the product, improving the perception that the customer has, aiming at a high level of quality, brand status and acceptance of the chosen customer segment.

The start-up and development of the project has a cost structure based on the following factors:

1. Initial costs

- Project engineering

  Costs with technical project design, design of the electromechanical system, electronic component and industrial design for the construction of the equipment.

- Planning

  Costs with the planning of the administrative organization, with the organization of the industrial production and assembly line, with the marketing and communication plan and with the definition and assembly of the distribution and marketing network.

2. Fixed costs

- Installations

  Monthly costs for renting facilities for offices and industry.

- Human Resources

  Hiring costs and monthly remuneration of project team members

3. Variable costs

- Development and innovation

  The cost structure linked to the development of the project and the constant demand for innovation that ensures that the Soil Return solution remains sufficiently adequate to the needs of consumers and can even present upgrades that propose the improvement of its environmental efficiency, will depend on the constant evaluations of the positioning of the product in the market and, above all, the degree of loyalty and willingness to purchase by institutional and private customers. Thus, investment in this area may show fluctuations resulting from market research that may prove to be necessary, to assess the opening of the

market to innovation and the degree of valuation that consumers attribute to the introduction of innovative improvements.

- Marketing and communication

  The costs associated with marketing are highly relevant to ensure effective communication with families. Involving them in the most diverse activities and providing constant content related to our sector. By being active in the local community and working on ER (Environmental Responsibility) projects, Soil Return hopes to contribute to the region where it operates and thus create a stronger bond with society through its contribution to environmental sustainability.

  It will be necessary to contract market research to obtain measurable results that provide information of critical relevance as to the price that consumers are willing to pay, as to the civic and environmental value they attribute to the solution and the value proposition and, above all, as to the fact that are frequent users of Soil Return and if this improves their self-concept in terms of individual environmental responsibility.

  The studies and research that marketing will have to carry out will also have to investigate the possible difficulties and barriers that the internationalization and expansion of business may face in geographies where cultural diversity changes the characteristics of the market, calling for a strategic marketing approach that prevent any cultural clashes and, on the contrary, leverage all the possible advantages that these cultures can bring to the project.

4. Production costs

- Purchase of raw materials
- Purchase of electrical and electronic components
- Energy
- Indispensable consumptions, such as water and other consumables whose cost varies

  It is important to note that cost management must be very careful and rational, since the more efficient it is, the better and more competitive the final price of Soil Return in the market will be, making it possible to pass on to the customer

this gain in efficiency that will be both the better, the more quickly gains of scale can be achieved, in terms of cost savings.

5. Financial costs

The precaution and predictability of the financial costs is essential, so that there is no lack of control that could compromise the project, so it will be critical to monitor their expression in the context of the project's financial management so that they never exceed the limits of reasonableness and the ability of business management to accommodate financing costs without compromising the investment strategy in innovation and development, production and market penetration.

2.12 Soil Return Final Business Model

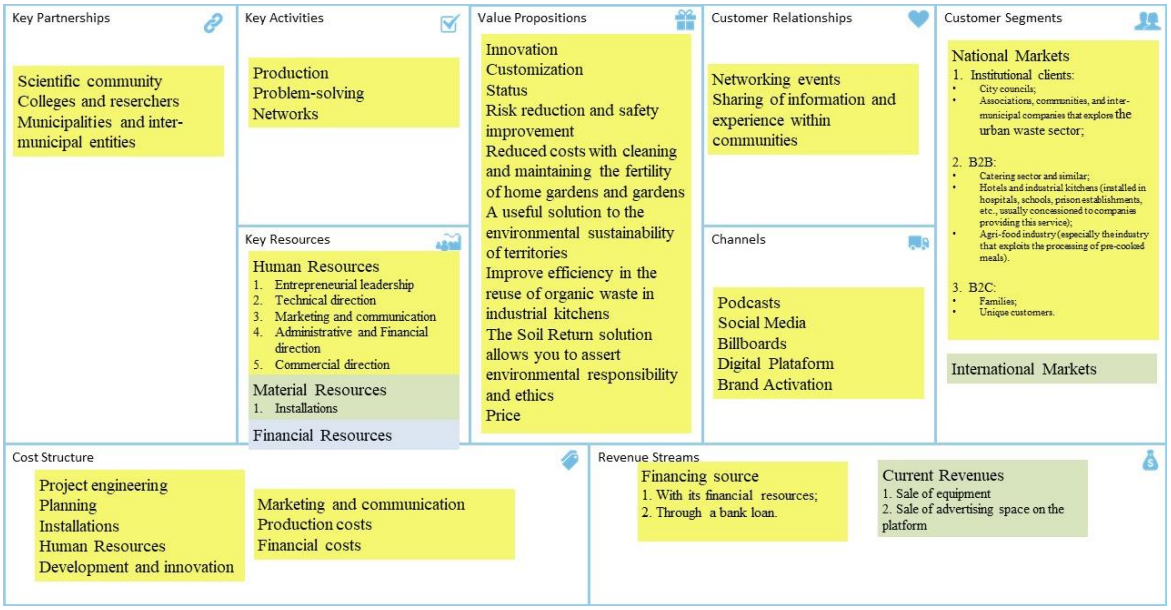

Table 2 - Soil Return Business Model, Own Elaboration

3.1Limitations on project preparation

One of the biggest limitations that had to be faced is the fact that it was not possible to benefit from some know-how resulting from the design, production and marketing of solutions with these characteristics, given that this limitation is simultaneously one of the strengths of Soil Return, since the impossibility of studying any solution that resembled the technological and business concept to extract relevant information from it, this means that, from the outset, competition is indirect and represented by the traditional composting solution.

Despite having collected, in the interviews carried out with various specialist interlocutors and agents with missions within the scope of the project, opinions and understandings that proved to be very useful to strengthen previous convictions about the project's potential, regarding the solution presented with Soil Return, its professional and political experiences, did not include any know-how acquired through contact with a technological solution to speed up the composting process, making it practically instantaneous.

The absence of any history did not facilitate the use of data that would allow working with a technical, economic and financial reference to better support the forecast instruments of the business plan.

3.2Further opportunities

After the project's start-up phase, during which it will be possible to test its economic potential and identify difficulties and obstacles, it will be possible, through a careful evaluation of all the data collected, to foresee the future opportunities that will open up after this first contact with the reality.

Once verified the efficiency and effectiveness of the solution, the biggest opportunity that will open up will be to realize its scalability and promotion in other territories.

What at this stage appeared to be one of the likely difficulties in asserting the basic idea of the project, that is, the diversity of cultures and respective cultural barriers, maybe one of its biggest and best critical success factors, benefiting from the fact that the project to be constituted in a logic of interculturality.

This project is born from an acute awareness of the serious environmental problems that the world is currently facing and from the drive for citizenship that must motivate public authorities, local, regional and national communities, families and companies, to assume their responsibilities, adopting measures to prevent and mitigate the impacts of these environmental problems and, above all, to adopt new ways of life, new modes of production and environmentally sustainable consumption habits that do not jeopardize the survival and quality of life of new and future generations.

Given the reality identified above, the paradigm shift in the economic model of society must become effectively global, abandoning, as far as possible, the linear economy model, highly predatory of natural resources and generator of waste, whose impacts environmental factors have been undeniably devastating, exponentially increasing the new paradigm that the circular economy model represents, opening a window of hope that is, perhaps, one of the last opportunities to prevent the Planet from entering the point of no return.

The Soil Return is, given the environmental reality that affects all regions of the world, a contribution to leverage the paradigm shift that the circular economy model represents.

Not with standing the validity of the civic values that inspired the empowerment of the initial idea, its implementation depends on its transformation into a business whose planning is fundamental so that the awareness and sense of environmental responsibility that underlie the project can go beyond the a merely idealistic plan to the concrete reality, with effective results, precisely at the level of prevention and mitigation of environmental impacts caused by decades of exclusive prevalence of the linear economy model.

The reflection initiated on the challenges that the global economy and national economies face today was also taken into account for the preparation of this project. In fact, the globalization of the world economy has brought a new challenge to the economy of countries, which have become increasingly dependent on companies' strategies, as their GDP growth inevitably depends on the dynamics and efficiency of their business fabric. It is also in this context that innovative and creative entrepreneurship, endowed with adequate talent and training, has gained fundamental importance, given the impetus it gives to the growth of national economies.

Entrepreneurs are now responsible for a very significant part of wealth generation, job creation and, consequently, with impacts that governments do not neglect, in terms of tax

collection arising from businesses and the income from the capital invested in them and the income earned by the workforce involved. However, entrepreneurs are also bearers of a new business culture, characterized by their concerns and assumption of responsibilities both from a social point of view, as well as from an environmental and sustainability level.

Normally starting from a start-up logic, entrepreneurship projects are regularly characterized by the way they present themselves to the market, considering the interests of all their stakeholders, in a logic of economic ecosystem that account for nature, attributes and potential of its entrepreneurship projects, communicating in a simple, clear and as objective way as possible, the business plans, the value propositions, the marketing strategy, its mission, vision and values.

One of the characteristics that often differentiates entrepreneurs is their ability to adapt to reality and to changes arising from social and economic dynamics that are not within their reach to control or even foresee, but at least try to understand what these trends dynamics are designing for the future.

This project includes the aspects and phases that appear to be essential, as mentioned above, in addition to the financial projections that reveal its economic viability, taking into account the estimated results and the prospects for growth and expansion of the business.

As throughout the project, in different moments and contexts, the project foresees the constant improvement of its offer, concerning both the technological solution it proposes to speed up the process of domestic or business composting, as about evolutionary development of the assistance services platform, but also in the strengthening of the relationship with all stakeholders and particularly with its customers.

The environmental and sustainability values that the project incorporates are fundamental and constitute an important asset to increase positive communication favorable to the business.

Taking into account the international validity of these values, even in geographies with some cultural barriers, the expectations and possibilities for growth and consolidation of the business are positive and challenging.

The Soil Return solution that this project proposes integrates the conceptual structure of the circular economy, in a model that breaks with the linear economic structure characterized by a cycle that ends in disposal. As we know today, when the end of a product's economic cycle is its disposal, waste is generated which in most cases represents a serious problem, often complex and of gigantic dimensions, with environmental impacts whose harmful effects on natural ecosystems , in environmental balance and quality, but also human health, are difficult to assess and mitigate.

Currently, both the governments of nations, as well as regional and local authorities, face enormous difficulties in managing and preserving the natural resources of the territories under their jurisdiction. Given this obvious difficulty, the solution defended here, either because of the civic and environmental values it brings, but above all because of the concrete and practical proposal it presents to solve the problem of organic waste just upstream, where it is produced, is sufficiently interesting to arouse your attention.

As a result of awareness campaigns and environmental education that have been carried out by various international organizations, by governments and institutions of local political power, there has been a growing awareness of citizens, societies, companies and authorities. , on the need to be informed and inform truthfully and transparently about the dimension, danger and impact of the great and serious environmental problems that threaten the future of Humanity.

Only with a clear and objective understanding of the dimension and complexity of the problems and the threats they pose, it will be possible to face them and summon everyone to participate in efforts to try to solve them, it is now certain that the same problems are felt at the local level, wherever they may be, they are problems with global impacts that call for concerted and global solutions. See how the causes and consequences of climate change and the inevitability of cooperation on a global scale challenge us, in the certainty that its impacts in Asia, Europe, Africa or the Americas can only be mitigated and its causes addressed and prevented within the framework of an internationally articulated and well-coordinated political and social response.

In this project, along the various concepts and ideas developed to explain their eventual implementation, the importance of the example from which inspiration was drawn is evident - natural ecosystems -, which constitute authentic models of circular economy,

since there is nothing in them gets lost and everything is transformed, guaranteeing its preservation and sustainability.

The recognition by consumers of the way their lives, the lives of their families and communities are impacted by environmental problems and by habits and behaviors that, being environmentally inefficient and even wrong, contribute as a cause, deepening these problems, is a positive thinking that is important to promote, as it can motivate a conscious change in their mentality and voluntary adherence to the new paradigms of enlightened and environmentally responsible consumption. In this sense, the citizen's involvement strategy in the initiatives that the project foresees to arouse this positive civic thinking can also increase the recognition of the validity of our value proposition and the interest in acquiring our Soil Return solution, essentially driven by motivations of environmental order.

It is undeniable that there is today in international public opinion an acute awareness and sensitivity to the emergence of the need for political measures to be taken that produce immediate effects and, above all, are carried out effectively at a global level, a fact that has not been given equal consideration on the part of the different government authorities participating in the concert of nations, in the political context of the United Nations (UN). It should be noted that the UN, with the commitment and personal determination of its secretary-general, the Portuguese António Guterres, has made insistent efforts to bring together all countries, and particularly those that are the greatest economic powers in the world, to promote a firm global consensus and a consequent commitment, so that the fight against climate change, pollution and the degradation of natural ecosystems is assumed in a fair, solidary and effective manner by all of Humanity.

Soil Return is a device that proposes a practical and easy solution, which will allow citizens, individually or collectively, to contribute to the preservation and increase of the potential that Nature gives us, applying the principle of the famous Law of Lavoisier: - “in nature nothing is lost, everything is transformed.” This statement by the French scientist is, in a way, a founding expression of the basic concept from which the pragmatic assumptions for the application of the circular economy model in which the business are developed of Soil Return proposes to act. A marketing activity that, being profitable, because it promotes the reuse of organic residues, preparing them to return to the environment where they were collected, also fulfills the function of preserving natural resources, correcting and enriching the soils and, simultaneously, increasing their

agricultural productive potential , as a result of their improvement with fertile nutrients that will increase the profitability of certain horticultural, fruit or floriculture crops whose development and growth of plants depends on the existence of these nutrients in the soil. This action will make a strong contribution to minimizing the extraction of natural resources and exploitation of soils and to maximizing the reuse of waste, through its re-entry into the economic circle with the return to its origin.

In the specific case of the product resulting from the process that takes place in Soil Return, the use of the nutritional value of the waste is very close to 100%, since all the resulting powder can be returned entirely to the earth and used in a dosed way to provide a gradual feeding of the plants controlling their growth and food quality.

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Appendix I – Interviews

Eng Luís Sousa - Manager and General Director of BioRumo

Degree in Mechanical Engineering from the Faculty of Engineering of the University of Porto. Consultant at the National Association of Young Entrepreneurs (ANJE), IEFP, and IAPMEI and Managing Partner of ECOAUDIT, Auditoria Ecológica Lda. Between 1994 and 2004 he served as General Director and Administrator of CADERNO VERDE, SA; and, between April 1995 and August 1998, he was Editor of the magazine "AIP AMBIENTE", a publication owned by Associação Industrial Portuense. From 1999 to 2001 he was Manager of 2KE, Consultadoria e Estratégia Lda. He was a founding member of the Forum Ambiente Magazine and the CAIS Association (Circle of Support for the Homeless).

1 – Quais são as principais ameaças à sustentabilidade do Planeta?

As principais ameaças resultam da actividade humana, da falta de ética na exploração de recursos, no consumo excessivo, na falta de cuidado com o outro.

A política do preço baixo e da exploração dos recursos humanos (em conjunto com a mão de obra infantil e barata), sempre com a lógica de se produzir mais e mais barato, tem apresentado uma enorme ameaça para o planeta. Enquanto o preço for o principal fator de competitividade, a preservação do planeta nunca será uma prioridade.

2 – Face às ameaças identificadas, de que forma se pode travar ou mitigar os efeitos de tais ameaças?

A mudança de comportamentos, ao nível individual, pode ter um efeito muito importante na sociedade e no mundo em geral. As empresas, de uma forma geral, já pensam nos 3 pilares da sustentabilidade com um cuidado crescente. No entanto o pilar económico nunca deixará de ser o mais importante para a comunidade empresarial. Pelo que a pressão dos consumidores poderá ter um papel muito importante na imposição de novas formas de gestão, em que os pilares ambiental e social sejam cada vez mais valorizados, e tenham impacto efectivo na actividade industrial e empresarial.

3 – A adesão ao modelo da economia circular em detrimento da economia linear é uma opção?

A economia circular ajuda a reduzir a extracção de matérias primas, valorizando a reutilização dos materiais já em circulação.

Assim, a economia circular é obviamente uma opção cada vez mais importante e que importa incentivar e apoiar.

No entanto e apenas como exemplo, á mais barato comprar um electrodoméstico novo do que reparar um aparelho que avarie. Importa por isso encontrar mecanismos práticos e rápidos, que valorizem e potenciem a adesão a novos modelos de economia circular.
Ao nível da formação, da economia (mesmo que com benéficos fiscais), do apoio à criação de projetos empresariais que incentivem esta prática.

4 – No contexto da economia circular, que valor têm e que função pode desempenhar a utilização de resíduos orgânicos com valor nutritivo produzido nas cozinhas?

Os resíduos orgânicos, podendo ser aproveitados para uma nova utilização, numa lógica de economia circular, são um excelente exemplo do que cada um de nós pode fazer nas suas casas. Sem grande trabalho e com um resultado visível para cada cidadão que opte por esta prática. Que já existia no tempo dos nossos familiares mais idosos, e que se foi perdendo com a evolução da sociedade.

5 – Que conceitos é necessário conhecer e aplicar na prática para que esses resíduos deixem de ser somente desperdício?

A vantagem do reaproveitamento dos resíduos orgânicos, por exemplo, para a produção de novo produto com um valor nutriente, é exactamente um excelente exemplo de uma mudança de comportamento, simples e com um resultado visível para qualquer cidadão.
Algo que pode ser feito de forma individual, mas com impacto ao nível de toda a comunidade.

6 – Que cuidados são necessários para garantir a segurança e qualidade nutritiva dos resíduos recuperados, por forma a que possam ser utilizados com eficiência e produzam os resultados esperados com a sua utilização?

Parece-me importante que exista algum tipo de formação ou sensibilização à população em geral, que venha a ser motivada para esta separação de resíduos orgânicos.
Nem todos os resíduos orgânicos podem ser aproveitados, sendo que o destino não é o mesmo para todos. Pelo que é essencial que exista esta sensibilização.

7 – Que vantagens possuem os fertilizantes naturais produzidos a partir de resíduos orgânicos, em comparação aos demais existentes no mercado que são produzidos por outros processos e com outras matérias-primas?

Os fertilizantes naturais são potencialmente mais benéficos do que os produzidos de forma industrial e com utilização de produtos químicos. Ambientalmente têm claras vantagens, pelo facto de permitirem uma reutilização de um resíduo que não teria nenhum tipo de aproveitamento futuro.

8 – Se numa cozinha doméstica forem produzidos resíduos cuja recuperação permite produzir um fertilizante natural que exceda as necessidades de uma família, para repor o equilíbrio dos solos da sua pequena horta ou jardim, há mercado para a sua comercialização?

A produção doméstica de um fertilizante natural, faz todo o sentido para uma utilização caseira.

A dificuldade de uma comercialização de uma produção que exceda as necessidades de cada uma das famílias que produza algum tipo de composto, resulta de questões logísticas, difíceis de ultrapassar. Efetivamente, o custo logístico de recolha doméstica, porta à porta, de excessos de produção, é demasiado elevado e difícil de tornar esta recolha ambientalmente e economicamente viável. Uma possibilidade seria montar-se uma solução de recolha de excessos de produção, de forma mais comunitária. Ou por exemplo com o apoio de instituições locais, bombeiros, entre outras organizações de intervenção local.

9 – A compostagem é um processo de recuperação que vem ganhando cada vez mais aderentes, será possível desenvolver essa tecnologia para que as famílias que vivem em propriedade horizontal também possam aderir a essa solução?

O projeto da horta porta à porta, por exemplo com grande disponibilidade de espaço e uma importante aposta por parte da Lipor, permite que os habitantes do Grande Porto (incluindo os que vivem em propriedade horizontal) possam aproveitar o produto deste processo.

10 – A desidratação dos resíduos orgânicos em contexto doméstico pode ser uma solução ambiental e economicamente viável?

Parece-me que sim. A grande vantagem deste tipo de solução (desidratação de resíduos orgânicos), tem a enorme vantagem de permitir algo (produto com valor nutritivo), que os cidadãos poderão aproveitar nas suas casas, nos seus jardins, …

Ao contrário da separação de outros resíduos, cujo tratamento ou destino, mesmo que seja a reutilização ou reciclagem são menos visíveis.

11 – Que vantagens e inconvenientes vê na instalação nas cozinhas de um equipamento que tritura, escorre e desidrata restos de comida vegetal?

A dificuldade ou inconveniente poderá aparecer pela dimensão reduzida de muitas das nossas cozinhas. Na verdade, as nossas cozinhas já devem estar apetrechadas com diversos contentores, para o papel e cartão, plástico, vidro, indiferenciados. As pilhas

também devem ser separadas. As rolhas, as tampas de embalagens, o óleo … Existem autarquias com mais de 20 tipologias de materiais que devem ser separados.
Sendo que toda esta separação faz sentido. No entanto, a dimensão das nossas cozinhas pode ser um entrave, caso o equipamento tenha uma dimensão que reduza ainda mais o espaço de circulação numa cozinha.

12 – Face à sua experiência e conhecimento, acredita que as famílias possam aderir à separação, tratamento e recuperação dos resíduos orgânicos onde eles se geram? Se sim, fá-lo-ão mais por razões económicas ou ambientais?

Infelizmente continua a ser mais fácil convencer os cidadãos a mudarem comportamentos com base em razões económicas, do que por razões ambientais. O caso do pagamento dos sacos plásticos é um exemplo disso. Muitas pessoas passaram a reutilizar sacos plásticos pelo facto de custarem 0,1€. Embora nem tudo seja positivo, porque a gramagem dos sacos plásticos aumentou, para garantir uma melhor resistência dos mesmos.

Dezenas de anos de desenvolvimento de campanhas de educação e de sensibilização ambiental, ainda não foram suficientes para a mudança de comportamentos que importa atingir. Mas não podemos deixar de valorizar que as razões ambientais são importantes para as atuais gerações, mas também para as próximas.

Como sabemos, "não existe um Planeta B".

DR FERNANDO LEITE

Fernando Leite has a degree in Economics from the Faculty of Economics of Porto, graduated with a Senior Management Program for Companies, and attended several Specialization Courses and Seminars in Business Management, Public Management, and Environmental Technologies.

He held the positions of Head of Division and later Director of the Department of Environment and Quality of Life of the Municipality of Maia for 12 years (1988 to 2000).

Manager of LIPOR, Greater Porto Intermunicipal Waste Management Service since 1980.

Managing Director of LIPOR, since 2000.

Administrator of Maiambiente, EM.

Vice President of ACR+, Association of Cities for Recycling.

Member of the Board of AVALER, Association of Energy Recovery Entities of Solid Urban Waste.

Vice-President of the Energy Agency of Porto.

Business Consultant.

1 – Quais são as principais ameaças à sustentabilidade do Planeta?

As principais ameaças à sustentabilidade no Planeta, são fundamentalmente as alterações climáticas, a desregulação que se assiste no ecossistema político mundial, com fricções importantes entre blocos de países, o empobrecimento de importantes regiões do Mundo, a exaustão dos recursos naturais, a desflorestação de enormes áreas do Planeta, tudo megaproblemas que exigem respostas, ações e compromissos globais de todos os Países.

2 – Face às ameaças identificadas, de que forma se pode travar ou mitigar os efeitos de tais ameaças?

A resposta é que só a união de esforços de todos os Países, em especial dos mais ricos e poderosos, só pode criar condições para uma luta objetiva, continuada, e concreta para diminuir os perigos de um desastre ecológico, humano e até económico do nosso Planeta. Pensando que a Ciência pode contribuir e muito para debelarmos os problemas que afligem os Povos e as Nações, fundamental é a ação e a vontade dos decisores políticos, a unidade das Pessoas em objetivos comuns, tudo no sentido de conjugarmos esforços e, com solidariedade, agirmos urgentemente à escala local e à escala global.

3 – A adesão ao modelo da economia circular em detrimento da economia linear é uma opção?

É muito óbvio o primado a dar à economia circular, porque só com uma concepção de reaproveitamento de materiais, valorização de resíduos como recursos, se evitará o continuo a exaurir de recursos naturais virgens, se poderá - com a importante participação da Inovação e da Investigação - empreender uma luta tenaz ao descartável, ao supérfluo, ao desperdício.

4 – No contexto da economia circular, que valor têm e que função pode desempenhar a utilização de resíduos orgânicos com valor nutritivo produzido nas cozinhas?

Nos nossos resíduos uma importante fração (cerca de 40%) são os designados bioresiduos, que tem um enorme potencial de valorização orgânica, podendo nós, de um modo mais caseiro e através da compostagem doméstica, ou de uma forma industrial em Centrais de Compostagem, transformar aqueles resíduos num designado “Composto” que

permite um enriquecimento dos solos, equilibrando-os com a matéria orgânica e outros componentes, que são fundamentais à vida das plantas.

5 – Que conceitos é necessário conhecer e aplicar na prática para que esses resíduos deixem de ser somente desperdício?

O primeiro conceito é o da razoabilidade, e da consciência ambiental. Não podemos aceitar e há evidencias claras da escassez de recursos naturais no Planeta. Tudo isto nos é dito por cientistas, por responsáveis políticos mais lúcidos, e daí a ação individual de cada um de nós ser fundamental.

Depois é apelarmos à tecnologia, à Indústria, ao conhecimento científico, à Inovação e à Investigação, para se promoverem as ações que possibilitem a criação de novos "produtos" a partir de matérias-primas secundárias.

6 – Que cuidados são necessários para garantir a segurança e qualidade nutritiva dos resíduos recuperados, por forma a que possam ser utilizados com eficiência e produzam os resultados esperados com a sua utilização?

O primado da ciência é fundamental, o cumprimento de normas, regulamentos, legislação é obrigatório, a responsabilidade do Produtor deverá ser sempre assegurada, o conhecimento certificado da origem das matérias-primas é importantíssimo e finalmente o licenciamento dos produtos para os fins que se pretende, deve sempre ser um fator em evidência.

7 – Que vantagens possuem os fertilizantes naturais produzidos a partir de resíduos orgânicos, em comparação aos demais existentes no mercado que são produzidos por outros processos e com outras matérias-primas?

Logo para começar, ao referimos a caraterística "natural", excluir, aqui, qualquer adição de produtos/matérias química.

Um composto orgânico natural, como o NUTRIMAIS da LIPOR, pode ser utilizado no modo de produção biológico, permitindo assim o consumo posterior das frutas, legumes, ervas aromáticas e medicinais, por públicos que por razões médicas, ou de opção de vida, exigem produtos biológicos. Os produtos que possam ser fabricados com a utilização de adubos químicos, têm essa diferença notória que é a de terem na sua constituição produtos químicos, alguns deles não benéficos para a saúde.

8 – Se numa cozinha doméstica forem produzidos resíduos cuja recuperação permite produzir um fertilizante natural que exceda as necessidades de uma família, para repor o equilíbrio dos solos da sua pequena horta ou jardim, há mercado para a sua comercialização?

Completamente. Os produtos de origem biológica, são muito procurados e existem diversas formas de eles serem vendidos, partilhados, sempre em benefício dos utilizadores.

9 – A compostagem é um processo de recuperação que vem ganhando cada vez mais aderentes, será possível desenvolver essa tecnologia para que as famílias que vivem em propriedade horizontal também possam aderir a essa solução?

Sim, para além de Hortas comunitárias, onde as famílias se deslocam para "trabalhar" a terra, temos opções de utilização de floreiras (de diferentes dimensões) que podem ser instaladas em varandas, e onde se produzem vegetais, flores, e outros produtos, tudo em consonância com o espaço de que se disponha.

10 – A desidratação dos resíduos orgânicos em contexto doméstico pode ser uma solução ambiental e economicamente viável?

Há estudos e experiências que vão nesse, sentido, entretanto, somos mais apologistas de uma compostagem natural, não forçada, que permita uma boa transformação dos materiais num composto de excelente qualidade, sem custos. Todas as demais soluções acarretam normalmente outros custos, como energia, manutenção, etc.

11 – Que vantagens e inconvenientes vê na instalação nas cozinhas de um equipamento que tritura, escorre e desidrata restos de comida vegetal?

Não sou particularmente adepto dessa metodologia, embora reconheça que em alguns países (por ex. EUA) seja utilizada. A cozinha é o "santuário" para preparamos os alimentos e não os "anexos" e os logradouros onde aí sim, se poderão realizar outras tarefas como a compostagem caseira.

12 – Face à sua experiência e conhecimento, acredita que as famílias possam aderir à separação, tratamento e recuperação dos resíduos orgânicos onde eles se geram? Se sim, fá-lo-ão mais por razões económicas ou ambientais?

Acredito piamente no bom senso, na visão ambientalista dos cidadãos que sempre procurarão ver num problema, uma oportunidade, e não serão motivações económicas, serão sim aspetos de proteção ambiental que motivarão tais comportamentos.

Pedro Sousa

Degree in Marketing Management and Certified Project Management Associate IPMA.

Project Manager collaborating with various entities (Quercus, UCP, CCH at UP) and in partnership with several companies, universities, and public entities, in the development of projects in the area of environmental sustainability, namely in the areas of nature conservation (Floresta Comum, SAVE, FUTURO – O Projecto das 100 mil Árvores and

OPJ projects “Liga-te à Pateira”, “Arribeirar” e “Grande Livro do Parque”), waste management (Green Cork and Prio Top Level), environmental education (Environmental Olympics, Heroes of All Kinds, Project 80, TransFormar, PPEC – Energy Efficiency in IPSS, #Zero Plastic, etc.) and projects to promote the transition to a sustainable economy (Condomínio da Terra and currently in the Common House of Humanity). Development of consultancy and training in the areas of innovation, natural resource management, sustainability, and circular economy.

1 – Quais são as principais ameaças à sustentabilidade do Planeta?

O crescimento económico baseado exclusivamente na exploração e predação de recursos naturais não assumindo todos os custos provocados e inerentes à sua exploração e colocando em risco as condições de sobrevivência das gerações atuais e futuras.

Economia baseada no consumo e não na produção de riqueza (capital natural) e de otimização de recursos (economia circular), sendo um grande obstáculo para o desenvolvimento sustentável.

A falha na ação global coletiva que é necessária para chegar um acordo no desenvolvimento de um quadro jurídico internacional de salvaguarda do interesse comum da Humanidade, e que permita a internalização das externalidades existentes no atual sistema de desenvolvimento económico (como por exemplo a capacidade de aprovisionamento de recursos essenciais para a regulação do clima).

2 – Face às ameaças identificadas, de que forma se pode travar ou mitigar os efeitos de tais ameaças?

A construção de um acordo jurídico global, através da ONU, para instituir o clima estável como Património Comum da Humanidade, deixando de ser apenas uma preocupação e passando a ser um objeto jurídico que permita construir um quadro jurídico regulatório assente no atual e futuro conhecimento científico que permita e melhore a sua regulação.

O desenvolvimento das sociedades (países) não deverá ser medido apenas pelo seu PIB mas também por outros índices que são até mais importantes para que o PIB se possa desenvolver de forma sustentável. As atividades económicas que exploram recursos naturais deverão ser responsabilizadas pelo pagamento de todas as consequências e custos associados gerados pela sua atividade a curto, médio e longo prazo.

Deveremos fazer a transição da economia linear (baseada no consumo e descarte) para uma economia circular baseada em serviços e soluções para reutilização dos produtos,

dos materiais e das matérias primas. Desenvolvendo ao meio natural os recursos que lhe foram retirados após os mesmos não poderem voltar a ser introduzidos nos ciclos produtivos. Deverão ser desenvolvidas atividades económicas baseadas em soluções de base natural, em que produção de riqueza regenera também produção de capital natural.

3 – A adesão ao modelo da economia circular em detrimento da economia linear é uma opção?

Não só é uma opção como é a única opção para podermos garantir que as gerações futuras dispõem dos mesmos recursos naturais que a atual geração usufrui. É uma questão de sobrevivência e de e manutenção da espécie Humana e de outras espécies de seres vivos neste planeta.

4 – No contexto da economia circular, que valor têm e que função pode desempenhar a utilização de resíduos orgânicos com valor nutritivo produzido nas cozinhas?

A alimentação e atualmente o setor com maior pegada ecológica das sociedades urbanas e desenvolvidas, por isso urgente eliminar o desperdício alimentar e o tratamento dos resíduos e das sobras alimentares, para que os mesmos ser reintroduzidos nos solos com fertilizante natural, tronando-os mais férteis para o desenvolvimento de espécies de flora, fungos, fauna, etc. essenciais para o desenvolvimento do ciclo produtivo natural. A solução atual de encaminhamento para aterro onde apenas pode ser reaproveitado para produção de energia é uma solução muito pouco produtiva.

5 – Que conceitos é necessário conhecer e aplicar na prática para que esses resíduos deixem de ser somente desperdício?

Primeiro repensar antes de adquirir cada produto reconhecendo a real utilidade e a origem de proveniência e consequente pegada ecológica inerente de cada produto. Segundo reutilizar ou encontrar outros consumos ou consumidores antes de o descartar. Terceiro conhecer os ciclos biológicos e os valores intrínsecos existentes em nos produtos alimentares, podendo encaminha-los para um mais adequado encaminhamento e transformação noutros recursos.

6 – Que cuidados são necessários para garantir a segurança e qualidade nutritiva dos resíduos recuperados, por forma a que possam ser utilizados com eficiência e produzam os resultados esperados com a sua utilização?

Os cuidados serão de otimizar ao máximo a qualidade nutritiva e energética que estes resíduos podem manter até serem desenvolvidos ao solo, garantindo as condições de higiene, segurança e saúde das pessoas que interagem no processo.

7 – Que vantagens possuem os fertilizantes naturais produzidos a partir de resíduos orgânicos, em comparação aos demais existentes no mercado que são produzidos por outros processos e com outras matérias-primas?

Primeiro de redução de consumo de recursos naturais, segundo de otimização recursos e energia já despendidos, terceiro são um impulsionador da biodiversidade e não uma ameaça com muitos dos fertilizantes sintéticos. Por último referir a drástica redução da enorme pegada ecológica inerente à produção e transporte dos fertilizantes sintéticos.

8 – Se numa cozinha doméstica forem produzidos resíduos cuja recuperação permite produzir um fertilizante natural que exceda as necessidades de uma família, para repor o equilíbrio dos solos da sua pequena horta ou jardim, há mercado para a sua comercialização?

A meu ver sim, visto que atualmente existe um enorme mercado para a utilização de fertilizantes sintéticos que podem ser substituídos por naturais, acrescido com uma grande diminuição da pegada ecológica inerente à sua produção. Existem muitos solos que atualmente não estão a ser fertilizados devido ao elevado custo económico e ambiental inerentes aos fertilizantes sintéticos.

9 – A compostagem é um processo de recuperação que vem ganhando cada vez mais aderentes, será possível desenvolver essa tecnologia para que as famílias que vivem em propriedade horizontal também possam aderir a essa solução?

Sim é importante o desenvolvimento de soluções tecnológicas que permitam que as populações das cidades que vivem maioritariamente em habitações em propriedade horizontal, visto que processo de compostagem é demasiado intrusivo para realizar dentro da habitação, quer pelos odores gerados e insetos associados ao processo quer pelo custo do espaço. Por isso a solução apresentada pelo Soil Return penso resolve estes dois problemas, e poderá ser um grande motivador para novas aderências principalmente se as famílias forem apoiadas no momento da sua aquisição.

10 – A desidratação dos resíduos orgânicos em contexto doméstico pode ser uma solução ambiental e economicamente viável?

Será uma solução ambientalmente se os resíduos líquidos forem devidamente canalizados para uma rede de saneamento com capacidade de tratamento dos mesmos. Para ser economicamente viável deverá ter um baixo consumo energético.

11 – Que vantagens e inconvenientes vê na instalação nas cozinhas de um equipamento que tritura, escorre e desidrata restos de comida vegetal?

As vantagens são claras como a redução de odores, insetos e espaço. Os inconvenientes serão adaptação da canalização para que os resíduos líquidos para a rede de saneamento básico e a capacidade das ETARs existentes estarem devidamente dimensionadas para a receção deste acréscimo de resíduos.

12 – Face à sua experiência e conhecimento, acredita que as famílias possam aderir à separação, tratamento e recuperação dos resíduos orgânicos onde eles se geram? Se sim, fá-lo-ão mais por razões económicas ou ambientais?

Sim tanto que esse era um hábito praticado até à 50 anos atrás e caso existam fatores motivadores e sensibilização penso que rapidamente muitos pessoas irão aderir e recuperar esse hábito. Acho que o farão primeiramente por razões ambientais e posteriormente por razões económicas caso venham a ser implementados metodologias de gestão de resíduos PAYT na suas regiões.

LIPOR Multidisciplinar team

Diana Nicolau

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Susana Lopes

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(Audio interview in mp3 anex)

Appendix 2 – Financial Statement

Soil Return

SUMMARY

Annual results	
	First Year
Income	€96 000,00
Costs	€294 940,00
Year result	**-€198 940,00**
Investment	€37 000,00
Financing	€70 000,00

Revenue Streams	**Total Income**			**Total Income Per Month**
	Price per unit	**Quantity**		
Product	65,00 €	1200	€78 000,00	€6 500,00
Advertising	150,00 €	120	€18 000,00	€1 500,00
Total			**€96 000,00**	€15.856,67

Soil Return

Salaries	January	February	March	April	May	June	July	August	Setember	October	November	December	Year Total
CEO	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€1 300,00	€15 600,00
Engineer	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€13 200,00
Marketeer	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€13 200,00
CFO	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€13 200,00
COO	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€1 100,00	€13 200,00
Worker	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€9 000,00
Worker	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€9 000,00
Worker	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€9 000,00
Worker	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€750,00	€9 000,00
Total	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€8 700,00**	**€104 400,00**

Office	January	February	March	April	May	June	July	August	Setember	October	November	December	Year Total
Rent	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€800,00	€9 600,00
Electricity + Water	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€2 400,00
Server	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€7 200,00
Internet/Telephone	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€120,00	€1 440,00
Total	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€1 720,00**	**€20 640,00**

Other suppliers	January	February	March	April	May	June	July	August	Setember	October	November	December	Year Total
Platform Maintenance		€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€4 400,00
Legal support	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€250,00	€3 000,00
Insurance	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€600,00	€7 200,00
Total	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€850,00**	**€10 200,00**

Marketing	January	February	March	April	May	June	July	August	Setember	October	November	December	Year Total
Highway Billboards								€1 400,00	€800,00	€800,00	€800,00	€800,00	€4 600,00
Influencers/Celebrities	€3 500,00	€3 500,00	€2 000,00										€9 000,00
Social-Media Campaigns	€200,00	€200,00	€200,00			€100,00			€100,00			€100,00	€900,00
Events	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€400,00	€4 800,00
RH Social Media Maintenance	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€2 400,00
Total	**€4 300,00**	**€4 300,00**	**€2 800,00**	**€600,00**	**€600,00**	**€700,00**	**€600,00**	**€2 000,00**	**€1 500,00**	**€1 400,00**	**€1 400,00**	**€1 500,00**	**€21 700,00**

Production	January	February	March	April	May	June	July	August	Setember	October	November	December	Year Total
Production Machines	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€5 000,00	€60 000,00
Raw Materials	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€10 000,00	€120 000,00
Electricity	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€1 200,00	€14 400,00
Consumption	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€300,00	€3 600,00
Total	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€11 500,00**	**€138 000,00**

Logistics and Distribution	January	February	March	April	May	June	July	August	Setember	October	November	December	Year Total
Logistics	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€200,00	€2 400,00
Distribution	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€700,00	€8 400,00
Total	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€900,00**	**€10 800,00**
Total costs	**€27 070,00**	**€27 070,00**	**€25 570,00**	**€23 370,00**	**€23 370,00**	**€23 470,00**	**€23 370,00**	**€24 770,00**	**€24 270,00**	**€24 170,00**	**€24 170,00**	**€24 270,00**	**€294 940,00**

Investments	
Plataform development	€34 000,00
Furniture	€3 000,00
Total	**€37 000,00**

Financing	Amount	%
Equity	€20 000,00	28,57
Business Angles	€25 000,00	35,71
Bank financing	€25 000,00	35,71
Total	**€70 000,00**	