

**HORIZON-WIDERA-2022-ACCESS-04-01**  
**(Excellence Hubs)**

**“Excellence hub in green technologies: Introducing innovation ecosystems in the Mediterranean food value chain”**

**EXCEL4MED**

**Living Labs report on the effectiveness  
of current business models, governance,  
and innovation as they emerge from the  
Business Model Canvas**

**Deliverable number: D2.4**

**Version 1.6**

Project Acronym: EXCEL4MED

Project Full Title: Excellence hub in green technologies: Introducing innovation ecosystems in the Mediterranean food value chain

Call: HORIZON WIDERA 2023

Topic: HORIZON-WIDERA-2022-ACCESS-04-01

Type of AcEon: HORIZON-CSA

Grant Number: 101087147

Project URL: <https://excel4med.eu/>

Editor	Johan Zammit, MLSC
Deliverable nature:	Report (R)
Dissemination level:	PUBLIC (PU)
Contractual Delivery Date:	31 January 2025
Actual Delivery Date:	31 January 2025
Number of pages:	77
Keywords:	<i>Triple layered business model canvas, stakeholder mapping, sustainability</i>
Authors:	Johan Zammit, MLSC Aybike Bayraktar, CIHEAM-IAMM
Peer review:	Josephine Schembri - MAFA Emma Cutajar - MAFA Ioannis Giannopoulos – ATTICA Styliani Roufou- NKUA Vasilis Valdramidis- NKUA George Kleftodimos- CIHEAM-IAMM

History Of Changes		
Version	Publication Date	Changes
1.0	04.03.2024	Created first draft based on the workshop in Malta
1.1	07.10.2024	Added the description of September's Living Lab in Greece
1.2	29.11.2024	Added the description of November's Living Lab in Malta
1.3	15.01.2025	Initial full version submitted for review
1.4	23.01.2025	Feedback from reviewers incorporated
1.5	30.01.2025	Final revisions incorporated
1.6	31.01.2025	Final version submitted

## Table Of Contents

List of Tables	4
List of Figures	4
Abbreviations	5
Abstract	6
Introduction	7
Theoretical Background	8
Applied Methodology	13
Stakeholder Mapping	14
Results from the Triple Layered Business Model Canvas Workshops	17
Malta's Living Lab - 21st November 2024	20
Economic Layer of TLBMC	20
Environmental Layer of TLBMC	27
Social Layer of TLBMC	33
Living Lab in Greece - 27th September 2024	42
Similarities & Differences Between Greece & Malta	49
Lessons Learned from EXCEL4MED Living Labs and Applied to EXCEL4MED Products	51
Gaps & Recommendations for Improving the Current Business Models	73
Conclusion	75
References	76

## List of Tables

Table 1. Sample: Value propositions highlighting the healthy aspects .....	22
Table 2. Sample: Environmental impact of each product activity .....	30

## List of Figures

Figure 1. Business model canvas .....	9
Figure 2. Triple bottom line .....	10
Figure 3. Horizontal & vertical coherence of the Triple Layered Business Model Canvas .....	11
Figure 4. Triple Layer Business Model Canvas .....	11
Figure 5. Stakeholder mapping in Malta .....	16
Figure 6. Stakeholder mapping in Greece .....	16
Figure 7. Group photo : Triple Layered Business Model Canvas workshops in Greece .....	17
Figure 8. Participants Filling in the Triple Layered Business Model Canvas in Greece .....	17
Figure 9. Group Photo: Triple Layered Business Model Canvas Workshops in Malta .....	18
Figure 10. Participants Filling in the Triple Layered Business Model Canvas in Malta .....	19
Figure 11. Participant in Malta looking at the economic layer (TLBMC) .....	20
Figure 12. Workshop moderator explaining the three layers of the TLBMC .....	21
Figure 13. Example of the economic layer as filled in by one of the participants .....	21
Figure 14. Participant in Malta looking at the environmental layer (TLBMC) .....	27
Figure 15. Example of the environmental layer as filled in by one of the participants .....	28
Figure 16. Example of the social layer as filled in by one of the participants .....	34
Figure 17. Workshop moderator explaining the importance of governance .....	36
Figure 18. Meeting notes of one of the living lab participants .....	40
Figure 19. Water reservoir near agricultural fields in Malta .....	41
Figure 20. Example of the economic layer as filled in by one of the participants in Greece .....	46
Figure 21. Example of the environmental layer as filled in by one of the participants in Greece..	47
Figure 22. Participants filling in the Triple Layered Business Model Canvas in Greece (1) .....	48
Figure 23. Participants filling in the Triple Layered Business Model Canvas in Greece (2) .....	48

## Abbreviations

BMC - Business model canvas

TLBMC - Triple layered business model canvas

MLSC - Malta Life Science Centre Limited

CIHEAM - Centre International de Hautes *Études Agronomiques Méditerranéennes*

IAMM - Institut Agronomique Méditerranéen de Montpellier

WP - Work package

## Abstract

This report has been developed as part of WP2 of the EXCEL4MED project. It aims to evaluate the effectiveness of Greece's and Malta's current business models and value chain arrangements. It analyses these models using stakeholder mapping and the Triple-Layered Business Model Canvas, along with a Governance layer in Greece and Malta. Through living labs and workshops in both countries, the study identifies the strengths, weaknesses, and gaps in existing business models. The report then bridges the gap between current practices and desired outcomes. The findings are relevant to Greece and Malta and offer a model for improving agri-food business models, not only in the Mediterranean countries but also throughout the EU and globally. It is expected that the results of this report will support project partners in future tasks and contribute to the existing literature by providing support to researchers who want to work on this topic.

## Introduction

This document has been developed as part of EXCEL4MED's Work Package 2. This report aims to assess the social, economic, environmental and governance performance of business activities in terms of their profitability, resilience, sustainability, transparency and fairness within value chains in Greece and Malta by using a Triple-Layered Business Model Canvas combined with a Governance Layer. This report assesses the current business models in both countries' value chains and measures the gap between the current state and the target outcomes.

We live in an era where the imperatives of sustainability, resilience, and innovation intersect with the pursuit of economic results. To give EXCEL4MED the biggest chance of leaving an impact in such an era, in harnessing the collective strengths of Greece, Malta, and France to forge a Mediterranean innovation excellence hub, one needed to make sure we take **a comprehensive, multi-dimensional approach** to analysing and planning the business models behind its initiatives.

This multi-dimensional approach was executed through the creation of

- **A stakeholder map**, followed by the
- **Triple-Layered Business Model Canvas**, augmented with an additional **Governance layer** for both Greece and Malta.

These were co-created during two specific workshops, one in Greece and one in Malta.

This document sets the stage for identifying a set of business models that would work and thrive in the current market conditions and those of the predictable future.

It builds on top of the work performed in **Task 2.1** where we identified the main socio-cultural aspects that determine consumer choices towards Mediterranean functional added-value products and **Task 2.2** where we did a meso-economic analysis of impacts and diffusion conditions of the innovation within industrial chains and territories.

This is a diagnostic exercise to analyse current business models and value chain arrangements. The subsequent aim of the exercise is to identify the gaps and be in a position to bridge these gaps between existing practices and desired outcomes of EXCEL4MED.

As part of its future deliverables the EXCEL4MED project is defining a set of feasible business models for its three ecosystems.

## Theoretical Background

In this section, business models, triple layered business models and the social, economic, environmental and governance layers and their purposes of use in previous studies will be explained in detail.

A business model is a framework that defines how an organisation

- Creates value,
- Delivers that value, and
- Generates revenue from the process.

Business models determine things like

- Whether we sell directly to customers or to resellers instead, or both
- Whether we have physical shops, online stores or both
- Whether we go high-end with price and offering or not

Although the concept of business model has become more widely used since the 1990s, Drucker defined the business model as "business theory" in his work in 1955 (Drucker, 1955). Later, the definitions made on the business model increased and various business model definitions made by many authors were reached. According to Choi et al., (1998) a business model is "a description of the various participants in a business, including their roles, the flow of goods and services, and profits." According to Osterwalder et al., (2005) a business model is "a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams." In later years, Osterwalder and Pigneur (2010) defined business models simply as "the logic of how an organization creates, delivers and captures value". It has also been determined that many definitions of business models in the literature refer to key terms such as value proposition (Cantrell, & Linder, 2000; Stahler, 2001; Gordijn, & Akkermans, 2003), target customer, channel (Cantrell, & Linder, 2000; Weill & Vitale, 2001), relationship (Cantrell, & Linder, 2000; Hamel, 2001), revenue model (Cantrell, & Linder, 2000; Stahler, 2001; Petrovic et al., 2001; Afuah & Tucci, 2003).

According to Osterwalder (2005) the inventor of the Business Model Canvas, there are nine economic factors that make up a business model. These are:

1. Partners
2. Activities
3. Resources
4. Value Proposition
5. Customer Segments
6. Customer relationship
7. Channels
8. Costs
9. Revenues

These factors are all depicted on separate boxes in the Business Model Canvas.

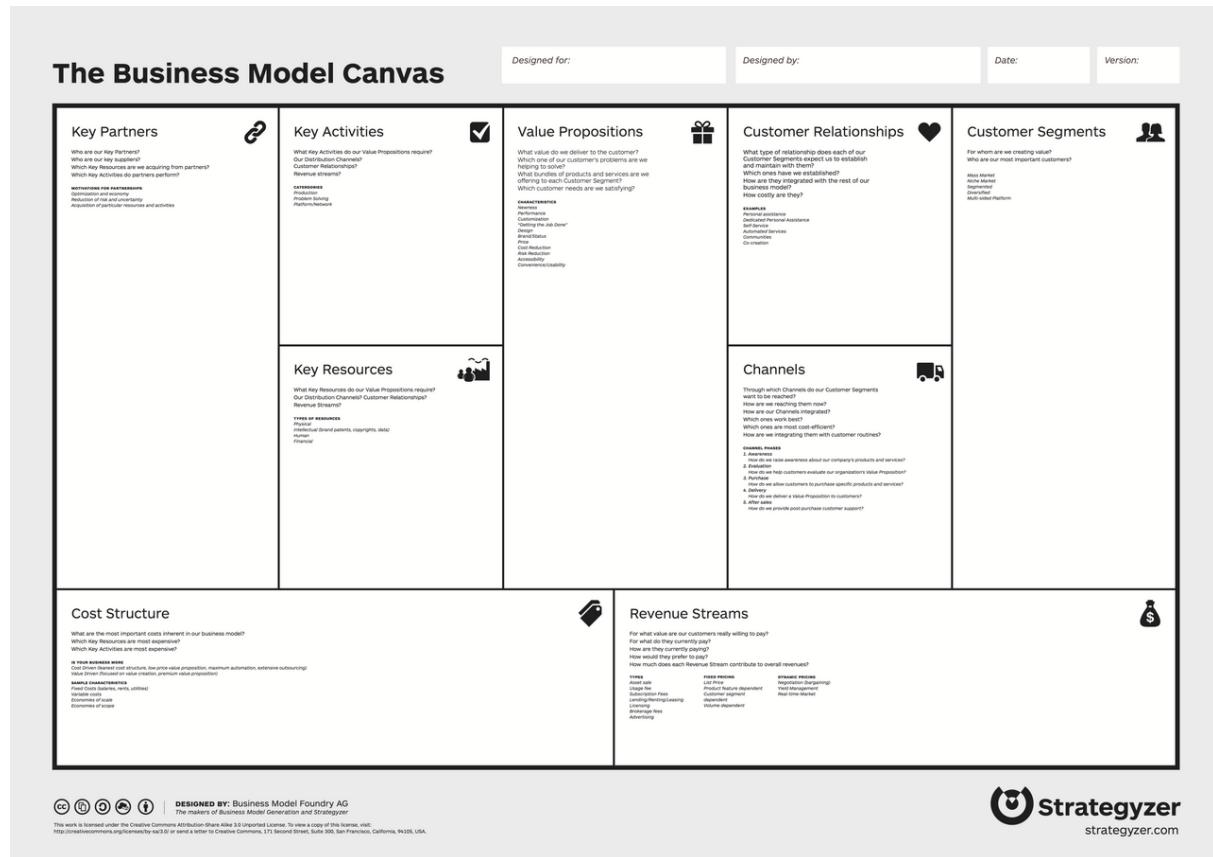


Figure 1. Business Model Canvas

The main limitation of the Business Model Canvas is that it only takes the economic aspect into consideration. Elkington (1994) proposed the sustainability concept, he called it the “triple bottom line” (TBL) bringing together:

1. Profit: Economic performance,
2. Planet: Environmental performance,
3. People: Social performance.

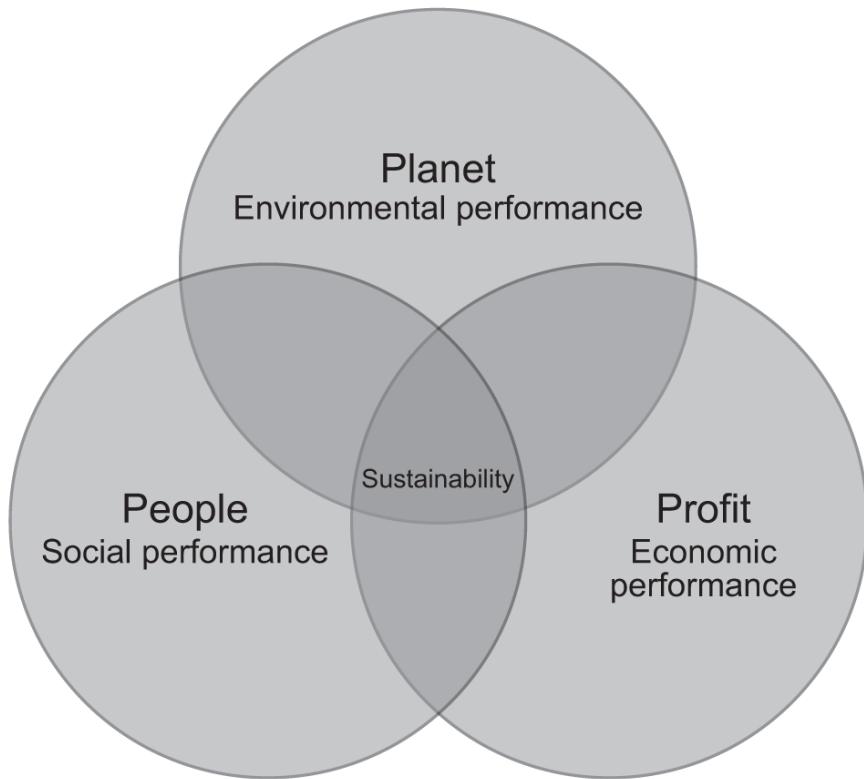


Figure 2. Triple Bottom Line

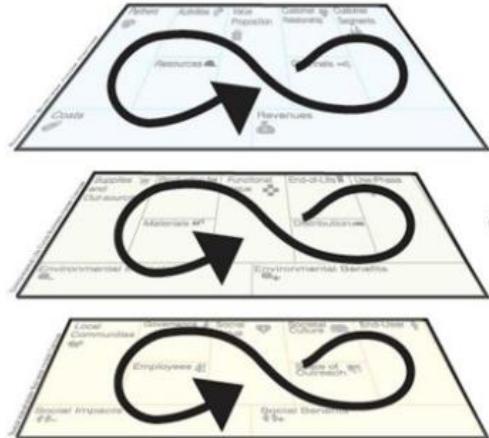
Hurst (2014) refers to this as the “purpose economy”, a new economy that prioritises sustainability, economic prosperity, and social well-being over traditional financial metrics. Nowadays, the environmental and social aspects are as important as the economic aspect of a business model. To this regard Pigneur et al., (2015) developed the triple layered business model canvas, focusing on sustainability by including environmental and social layers on the original canvas business model. Pigneur had also co-authored the original paper about the business model canvas.

The triple layered business model builds upon the concept of the Business Model Canvas by adding two more dimensions

- 1) Environmental aspects: A second layer with nine environmental elements built with life cycle thinking approach to the environment.
- 2) Social aspects: A third layer with nine social elements that follows a stakeholder approach to social issues.

According to Zott & Amit (2009), the Triple Layered Business Model Canvas does not simply enable us to study the economical, environmental, and social aspects on their own (horizontal coherence across the layer) but also to ensure what is referred to as vertical coherence. Vertical coherence is achieved by connecting each layer's components to their analogues in the other layers. The result is a more robust and holistic view of an organisation's business model through its actions and relationships, which can help a more systems-level perspective of sustainability-oriented innovation.

## Horizontal coherence



## Vertical coherence

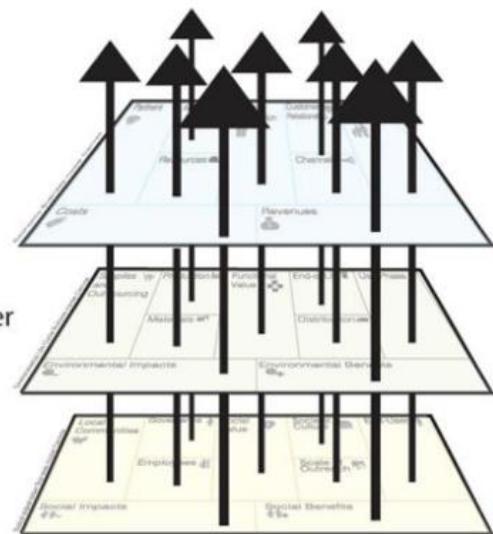


Figure 3. Horizontal & vertical coherence of the Triple Layered Business Model Canvas.

The triple-layer business model canvas consists of twenty-seven blocks, each consisting of nine blocks, (Figure 4) which take into account:

- Economic (partners, activities, resources, value proposition, customer segments, customer relationships, channels, costs and revenues),
- Environmental (supplies and out-sourcing, production, materials, functional value, end-of-life, distribution, use phase, environmental impacts and environmental benefits), and
- Social (local communities, governance, employees, social value, societal culture, scale of outreach, end-user, social impacts and social benefits) factors that create a business model.

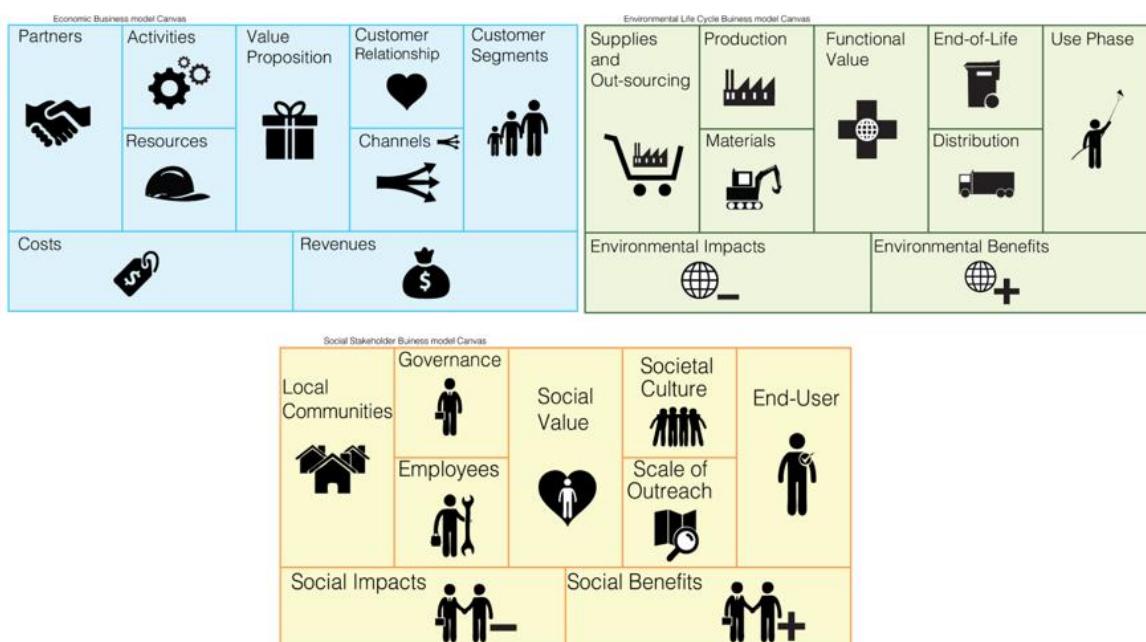


Figure 4. Triple Layer Business Model Canvas source: Joyce & Paquin, 2016

The final element is the governance layer. Together with the environmental layer and the social layer this makes up the popular term ESG (UN 2004 report "Who Cares Wins").

Governance refers to things such as:

1. The structure of the entity (or entities) behind the ecosystem,
2. The decision-making process of this entity,
3. How ethics relate to the entity,
4. The compliance the entity has/needs,
5. How the entity tackles diversity.

## Applied Methodology

This study assesses the current conditions of the business models in Greece and Malta and evaluates the value chain. The methodology applied for this task is given below.

### **Step 1.** Preparation phase:

A stakeholder mapping meeting was held with the project partners in Malta in January 2024. In this meeting, the Power-Interest Matrix was used to analyse the impact and interest of stakeholders in the project. This method guided the design of the workshops by focusing on high-impact and high-interest stakeholders.

In line with the aim and scope of the workshops in Greece and Malta, stakeholders from different sectors of the food sector were invited. Participant profiles were selected based on various socio-demographic characteristics such as gender and age. The workshops were designed to focus on the analysis of existing business models and the identification of their shortcomings, taking into account the local context. Before executing the Triple Business Model Canvas with stakeholders the approach mentioned in a set of papers including Panta, (2020); Pardalis et al., (2020); Joyce & Paquin, (2016); Bischof et al., (2020) were studied.

### **Step 2.** Application phase:

At this stage, two separate workshops were held, one in Greece in September 2024 and one in Malta in November 2024. Both workshops aimed to analyse existing business models using the Triple Layer Business Model Canvas and identify their shortcomings and strengths.

In these workshops, participants evaluated their current business models using economic, environmental and social layers. Weak points and opportunities in business models were revealed through group work, Q&A and brainstorming sessions.

### **Step 3.** Evaluation phase:

At this stage, the aim was to evaluate the findings obtained in the workshops from a sustainability perspective. The aspects of existing business models that need to be developed in environmental and social dimensions were analysed. The outputs were structured as a guide for sustainable business models planned to be developed in the future.

## Stakeholder Mapping

Before delving into business models and the triple layered business model canvas the EXCEL4MED partners met to map out who the stakeholders of the agri-foods value chains are, especially those related to the three EXCEL4MED ecosystems.

Two workshops were held, one in Malta, at the Malta Chamber of Commerce, Enterprise and Industry on the 25th January 2024 and one in Greece on the 17th May 2024.

## Stakeholder Mapping Process

The stakeholder mapping process has several steps. It is not just listing the stakeholders. The steps taken were the following:

1. Listed all stakeholders in Malta, and separately in Greece,
2. Defined what they provide to the ecosystem,
3. Defined what they get from the ecosystem,
4. Scored their influence (power) in the ecosystem - High 10 / Low 1,
5. Scored their interest in the ecosystem - High 10 / Low 1.

Every entity in the ecosystem can contribute directly or indirectly. So for each entity listed we discussed its role in the ecosystem and what it provides directly or indirectly to the ecosystem and what it gets directly or indirectly from the ecosystem. We strived to think of all the influencing factors and who has a say on them, but taking into consideration the whole agri-food supply chain and beyond, the full life cycle of a product, not just while it is produced.

## Ecosystem Stakeholders

With this background at hand the workshop attendees set out to list down all stakeholders following.

- Producers
- Processors
- Distributors
- Supermarkets
- Grocery shops
- Green grocers
- Fresh fruit markets
- Fertiliser/pesticide & agrochemical manufacturers
- Agronomists
- Chemical engineers
- Food sector businesses
- R&I researchers
- research centres
- Experts
- Professionals
- Consultants
- Academic institutions
- NGOs

- Environmental organisations
- Policy makers,
- Local government
- National government
- EU authorities
- Farming associations
- Funding bodies
- Private equity firms
- Venture capital investors
- Media companies
- Consumers
- Citizens

A big emphasis was made to ensure all stakeholders of the agri-food supply chain, especially those with pomegranate and citrus related products, are identified.

And for each stakeholder two questions were asked

- What do they provide the ecosystem?
- What do they require from the ecosystem?

We also asked and discussed whether we learn from the wider fruit supply chain / food processing, food safety, food preservation supply chain, and from stakeholders of green technologies in food processing and other food innovations.

Below a screenshot is provided of the Excel sheet with the stakeholder mapping in Malta and the stakeholder mapping in Greece.

## Mapping Stakeholders in Malta

A	B	C	D	E	F	G	H	I	J	K
1 Stakeholders In Malta										
2	What The Stakeholder Provides									
3	#	Stakeholder name	Short description	Website	Research	Policy	Funding	Organic Waste	Raw Material, Fruit & Veg	Selling To Consumers
4	1	University Of Malta	Main university in Malta	<a href="https://www.um.edu.mt/">https://www.um.edu.mt/</a>	x					
5	2	MCAST	Malta College of Arts, Science and Technology	<a href="https://mcast.edu.mt/">https://mcast.edu.mt/</a>	x					
6	3	EIT Food	European Institute Of Technology - Food Division	<a href="https://www.eitfood.eu/">https://www.eitfood.eu/</a>			x			
7	4	Wasteserv	Government owned company managing waste	<a href="https://www.wsm.com.mt/">https://www.wsm.com.mt/</a>				x		
8	5	MCCAA	Authority for consumer protection and competition	<a href="https://www.mccaa.org.mt/">https://www.mccaa.org.mt/</a>		x				
9	6	Malta Food Agency	Deliver public services in relation to food	<a href="https://foodagency.mt/">https://foodagency.mt/</a>		x				
10	7	Ministry for Health and Active Ageing	responsible for the health policy, health care & public health initiatives	<a href="https://health.gov.mt/">https://health.gov.mt/</a>		x				
11	8	Mater Dei Hospital	Main hospital	<a href="https://healthservices.gov.mt/en/MDH/Pages/Home.aspx">https://healthservices.gov.mt/en/MDH/Pages/Home.aspx</a>	x			x		
12	10	Mgarr Farms	Main seller of fresh fruit & vegetables	<a href="https://www.mgarrfarms.com/">https://www.mgarrfarms.com/</a>						x

Figure 5. Stakeholder mapping in Malta

## Mapping Stakeholders in Greece

Stakeholders In Greece										
What The Stakeholder Provides										
#	Stakeholder name	Short description	Website	Research	Policy	Funding	Organic Waste	Raw Material, Fruit & Veg	Selling To Consumers	Other Resources
1	ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON	National and Kapodistrian University of Athens (NKUA)	<a href="https://www.uoa.gr/">https://www.uoa.gr/</a>	x						x
2	ELLINIKOS GEORGIKOS ORGANISMOS - DIMITRA	Hellenic Agricultural Organisation Dimitra (ELGO)	<a href="https://www.elgo.gr/">https://www.elgo.gr/</a>	x						x
3	ENOSI KATANALOTON POIOTITA TIS ZOIS	Consumers' Association "The Quality of Life" (EKPIZO)	<a href="https://www.ekpizo.gr/">https://www.ekpizo.gr/</a>	x						x
4	SMART AGRO HUB ANONYMI ETAIRIA	Smart Agro Hub S.A. (SAH)	<a href="https://smartagrohub.gr/">https://smartagrohub.gr/</a>	x						x
5	SYNDESMOS ELLINIKON VIOMICHANION TROFIMON SOMATEIO	Federation of Hellenic Food Industries (SEVT)	<a href="https://www.sevt.gr/">https://www.sevt.gr/</a>	x						x
6	PERIFERERIA ATTIKIS	Region of Attica (PATT)	<a href="https://www.patt.gov.gr/">https://www.patt.gov.gr/</a>		x	x				x
7	ELLINIKI VIOMICHANIA CHYMON KON. DEDES ASPIS AE	Aspis Hellenic Juice Industries	<a href="https://www.aspis.gr/">https://www.aspis.gr/</a>				x	x	x	
8	Hellenic Ministry of Health	Responsible for the Health	<a href="https://www.moh.gov.gr/">https://www.moh.gov.gr/</a>		x					
10	Ministry of Education, Religious Affairs and Sport	Education system and for super	<a href="https://www.minedu.gov.gr/">https://www.minedu.gov.gr/</a>		x					
11	EPSA	Factory that produces soft drinks	<a href="https://epsa.gr/el/">https://epsa.gr/el/</a>				x	x	x	
12	Alexandros Pittas S.A.	ATTIKI bee culturing company	<a href="https://www.attiki-pittas.gr/">https://www.attiki-pittas.gr/</a>				x		x	
13	Delta Foods S.A.	Production and distribution of dairy products and others	<a href="https://www.delta.gr/">https://www.delta.gr/</a>	x			x		x	
14	KYKNOS S.A.	Greek canning company	<a href="https://kyknoscanning.com/el/">https://kyknoscanning.com/el/</a>				x		x	
15	Mandrekas S.A.	Dairy products company	<a href="https://www.mandrekas.gr/">https://www.mandrekas.gr/</a>				x		x	

Figure 6. Stakeholder mapping in Greece

## Results from the Triple Layered Business Model Canvas Workshops

After the first step was completed, i.e. the stakeholder mapping, the second part of the exercise was to assess the social, economic, environmental and governance performance of agri-food stakeholders in both Greece and Malta. To achieve this, two Living Labs were organised: one in Greece, organised by the Federation of Hellenic Food Industries (SEVT), and one in Malta, organised by the Malta Food Agency (MAFA).



Figure 7. Group Photo: Triple Layered Business Model Canvas workshops in Greece



Figure 8. Participants filling in the Triple Layered Business Model Canvas in Greece



Figure 9. Group Photo: Triple Layered Business Model Canvas workshops in Malta



Figure 10. Participants filling in the Triple Layered Business Model Canvas in Malta

The Living Lab participants were guided through all twenty-seven sections of the Triple-Layered Business Model Canvas, nine boxes for each layer, and they answered a set of questions about each topic. This systematic approach ensured the comprehensive coverage of all aspects involved. The exercise aimed to identify the gap between the current state and the target EXCEL4MED outcomes.

## Malta's Living Lab - 21st November 2024

On the 21st November 2024 an EXCEL4MED living lab was organised in Malta. Over fifty participants representing all the various stakeholders were present at the workshop. This was the culmination of a lot of preparatory work from the EXCEL4MED partners, particularly those in Malta. The participants were guided to fill in the Triple Layered Business Model Canvas of their product.

### Economic Layer of TLBMC

The first of the three layers to explore with stakeholders in Malta's agri-food value chain was the Economic Layer. Through the nine boxes of the Economic Layer we analysed how their ventures work from an economic viability and profitability point of view.

What follows is a description of the outcome from each of the nine sections of the Economic Layer.

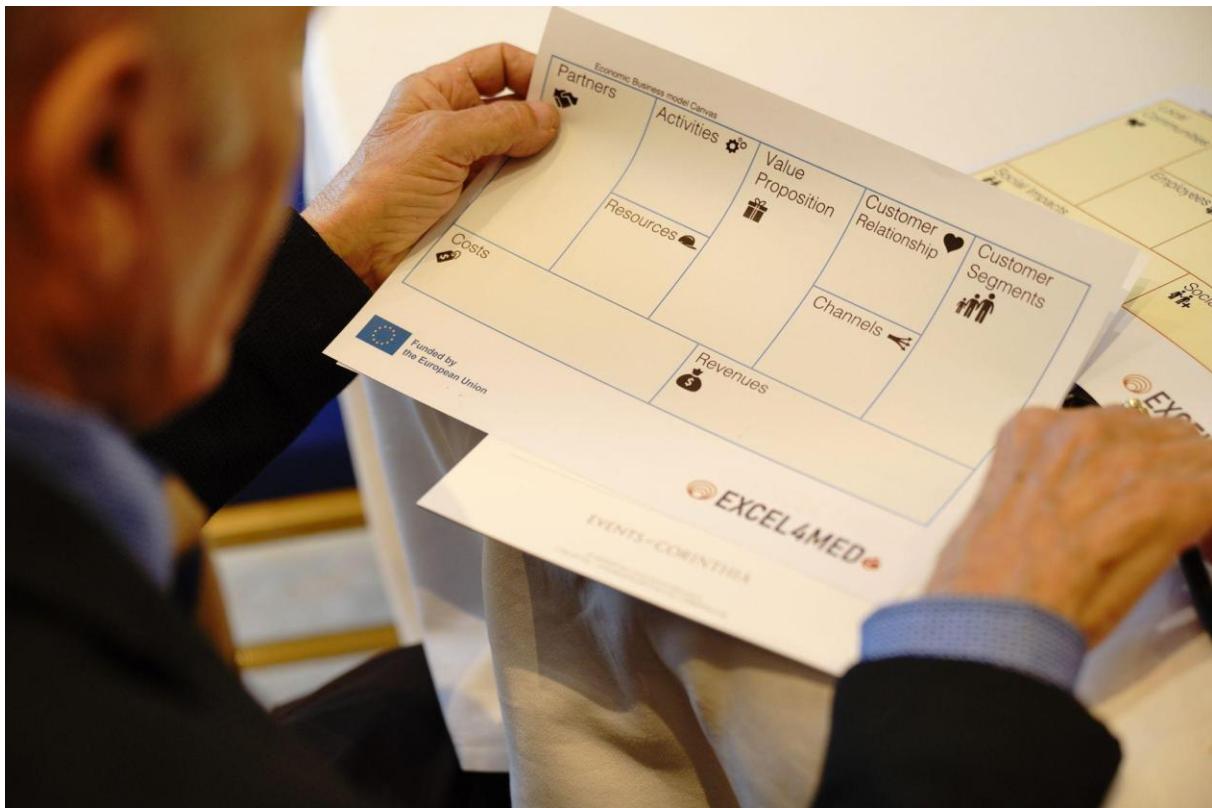


Figure 11. Participant in Malta looking at the economic layer (TLBMC)



Figure 12. Workshop moderator explaining the three layers of the TLBMC

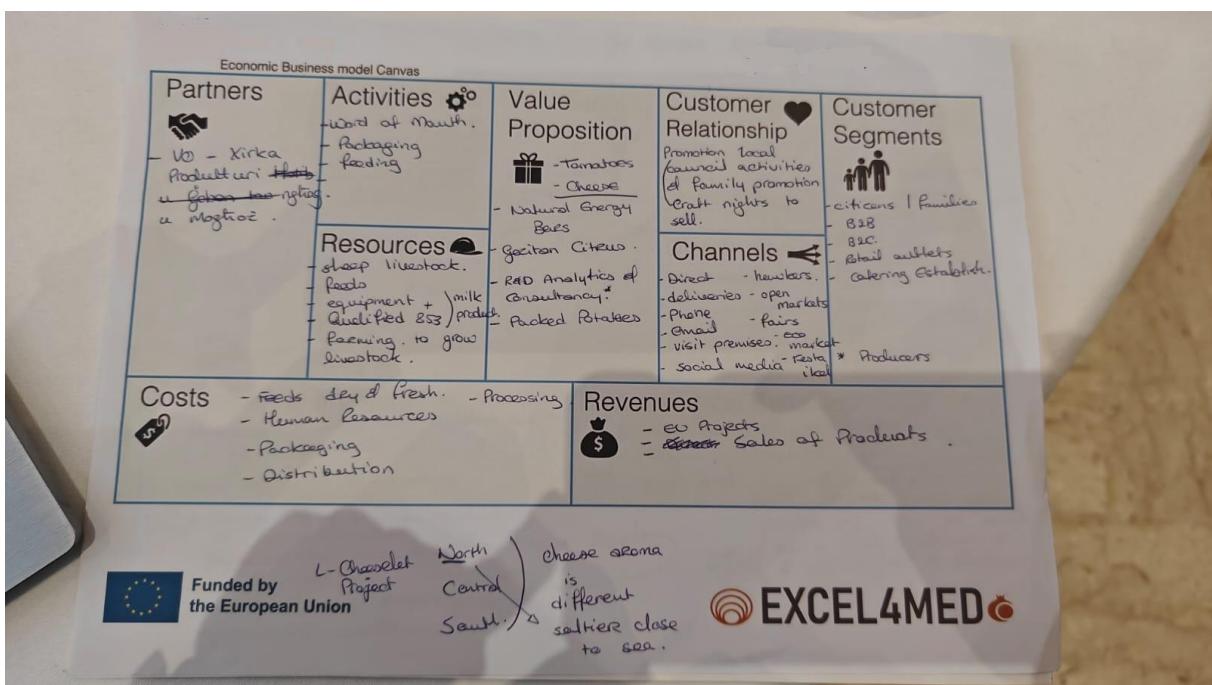


Figure 13. Example of the economic layer as filled in by one of the participants in Malta

## 1. Value Proposition

We started by asking the attendees what their value proposition is. The value proposition is a clear statement of the unique value a business offers to its target customers, solving their problems and fulfilling their needs. For example;

- Preġju's value proposition is that their 100% natural energy bar provides a convenient, healthy, and delicious source of energy to fuel a person's active lifestyle without artificial additives or preservatives.
- The producer of ġbejniet (cheeselets)'s value proposition was that their 100% natural goat's milk cheeselets offer a unique, artisanal snack that is both indulgent and nutritious, providing a rich, creamy taste and essential nutrients without artificial additives.

It could be noted that the common thread of all value propositions was that they all highlighted the natural and healthy aspects of the products, emphasizing their unique qualities and benefits to consumers.

Preġju	100% natural energy bar
Producer of ġbejniet	100% fresh cheeselets

Table 1. Sample: Value propositions highlighting the healthy aspects

## 2. Customer Segments

The second item addressed was customer segments. Each participant was asked to list the distinct groups of people or organisations they aim to reach and serve with their products or services. The answers varied:

1. Producers,
2. Domestic consumers,
3. Retail outlets,
4. Tourists / touristic establishments,
5. Food processing companies,
6. Health conscious people,
7. Parents,
8. Busy people, who do not have much time to run errands and buy fresh produce and
9. Businesses.

The customer segments are very specific to each business, and so one cannot identify a common thread between them all. There were two non-generic aspects that were identified in this part of the workshop:

1. Since tourism is a very important industry for Malta, with a huge number of tourists visiting Malta every year, tourists are a big market for local, fresh/healthy premium products.

2. Nowadays people are very busy with their jobs/careers and while they value healthy premium products they need convenience in getting them, as they do not have the luxury of time on their hands to go around and do errands.

### **3. & 4. Channels & Customer Relationships**

The third and fourth notion the workshop discussed were the Channels and the Customer Relationship. We are writing about these two together as the workshop conversation on these two aspects were very intertwined.

The channels are paths/ways the business uses to reach the identified target segments and to sell to them. Customer relationships are the way of interacting and connecting with customers to build loyalty, satisfaction, and advocacy. Consequently, each participant was asked how they reach their target segments and how they continue to interact with them. Channels and customer relationships, while not exactly the same, however, are very related, with the participants sort of “mixing” the two together in one answer. Hence why we are putting them in a single section. The answers varied:

1. Website,
2. Social Media (mainly Facebook),
3. E-Newsletter,
4. Community events,
5. Open markets/farmers markets,
6. Membership club (build a community around the product).

The most common threads in the discussion were:

1. Digital channels are very important nowadays. The importance of having a mobile-friendly website where the customer can order the product from.
2. The challenge of deliveries for small businesses. Deliveries can offer logistics headaches.
3. The importance of word-of-mouth. This would be the best marketing, where existing customers themselves refer other customers to the business.
4. The importance of face-to-face interactions at open markets, where one can meet customers in person, engage in direct conversations, and build a genuine human connection.

### **5. Key Resources**

The fifth item that was discussed was the key resources the participants required to create their value proposition. The answers were the following:

1. Machinery,
2. Employees (Staff),
3. Raw materials (and the farmers to produce that raw material),
4. Lab equipments,
5. Chemicals.

The key resources are usually common with many businesses. It is the ability to bring these resources together in a special way that makes a difference. One of the most important resources of an agri-food business is the raw material i.e., the quality and freshness of the fruits and vegetables.

## 6. Key Activities

The sixth area that was discussed were the key activities. Key activities are the one of the most important things a company must carry out to deliver its value proposition. The participants were asked to list down the key activities of their operations. This is a summary of the results:

1. Production of product,
2. R&D (research & development),
3. Packaging,
4. Transport/delivery,
5. Marketing/promotion/sales,
6. Customer care/support.

Two key aspects that came up as part of this discussion were:

1. R&D: To create innovative products a big effort goes into R&D.
2. Ecosystem: Like every other business, growing from a small one/few person(s) enterprise to a fully fletched business is challenging, and having a supporting ecosystem that can help you is very important.

## 7. Key Partnerships

The next item that was discussed were the Key Partnerships. Key partnerships are the network of suppliers, partners, and alliances that a business relies on to operate effectively and deliver its value proposition. The participants were quizzed to list down who they collaborate with, who they partner with, who their suppliers are etc. This is a summary of the results:

1. Farmers: That produce the raw material for agri-foods
2. Co-operatives (becoming a member in a cooperative where members are in the same or similar business)
3. Delivery companies (to deliver the product)
4. Financial institutions: that provide loans and other financial instruments
5. Influencers: A common way of marketing nowadays
6. Suppliers of machinery

A key aspect that came up as part of this discussion is the strong bond that develops with farmers when agri-foods are produced.

## 8. Cost Structure

The next point that was discussed were the costs. Now that the participants had listed down the product, the activities, resources, channels and partners involved in producing their product

or delivering their service they were ready to list down where they spent their money during these activities. This is a summary of the results:

1. Salaries,
2. Buying raw materials,
3. Corporate tax,
4. Machinery,
5. Transport,
6. Advertising,
7. Rent/buying offices,
8. Water & electricity.

## 9. Revenue Streams

Last but not least, the last item for discussion for the economic view (layer 1) of the Business Model Canvas was the revenue streams. Revenue streams are the various ways a business generates income from its value proposition. This is a summary of the results:

1. Sales,
2. EU funding,
3. Sponsorships.

There were no surprises in the answers to this item however it did spark an interesting conversation about EU funding. The participants explained that EU projects and EU funding offer a great alternative route to the normal route of doing research on agri-foods and developing a product, while everything is fueled by either sales, a loan or money from investments. A huge majority of the participants said EU projects are the perfect space to:

- a) Collaborate with foreign (non-Maltese) organisations,
- b) Evolve the research required to produce agri-goods through the funding provided.

EU funding for agri-food ventures is definitely an aspect that the EXCEL4MED should explore in subsequent work packages.

## Key Findings - Economic Layer of TLBMC - Malta

Some key characteristics of Malta's agri-food value chain were identified during the discussion about the Economic Layer of the Triple Layered Business Model Canvas, particularly:

1. The farmers are either self-employed or still self-employed but part of a farmers cooperative.
2. Their fields are small (no huge fields like in other countries).
3. There is big competition from imported fruits and vegetables and this is increasing.
4. There is both local governmental financial support and EU financial support, but this comes with the need to handle more paperwork.
5. Since tourism is a very important industry for Malta, tourists can be a big market for local, fresh/healthy premium products.

A set of aspects, which are not limited to Malta, were also gathered.

- Health products: Agri-food product producers highlight the natural and healthy aspects of their products, emphasising their unique qualities and benefits to consumers.
- Deliveries: Nowadays people are very busy so deliveries, despite presenting fresh logistics challenges, could open up new customer segments.
- Online/offline presence: The importance of having both a strong online presence, coupled with a physical presence at open marketing, and in key shops.
- Raw materials : The most important resource of an agri-food business is obviously the raw material i.e. the quality and freshness of the fruits and vegetables.
- R&D: A premium agri-food product also requires a considerable R&D effort.
- Costs "Chicken & Egg": Costs of R&D and raw materials are considerable, thus profit margins could be very low unless one opts for a premium product. But a premium product then requires higher costs of packaging and of sales/marketing/advertising.
- EU funding: EU funding for agri-food ventures is definitely an aspect that the EXCEL4MED should explore in subsequent work packages.
- Ecosystem: Having a supporting ecosystem that can help many of the challenges listed above.

## Environmental Layer of TLBMC

In this section of the Triple Layered Business Model Canvas the participants were asked to assess the environmental impact and environmental benefit of creating and selling their product.



Figure 14. Participant in Malta looking at the environmental layer (TLBMC)

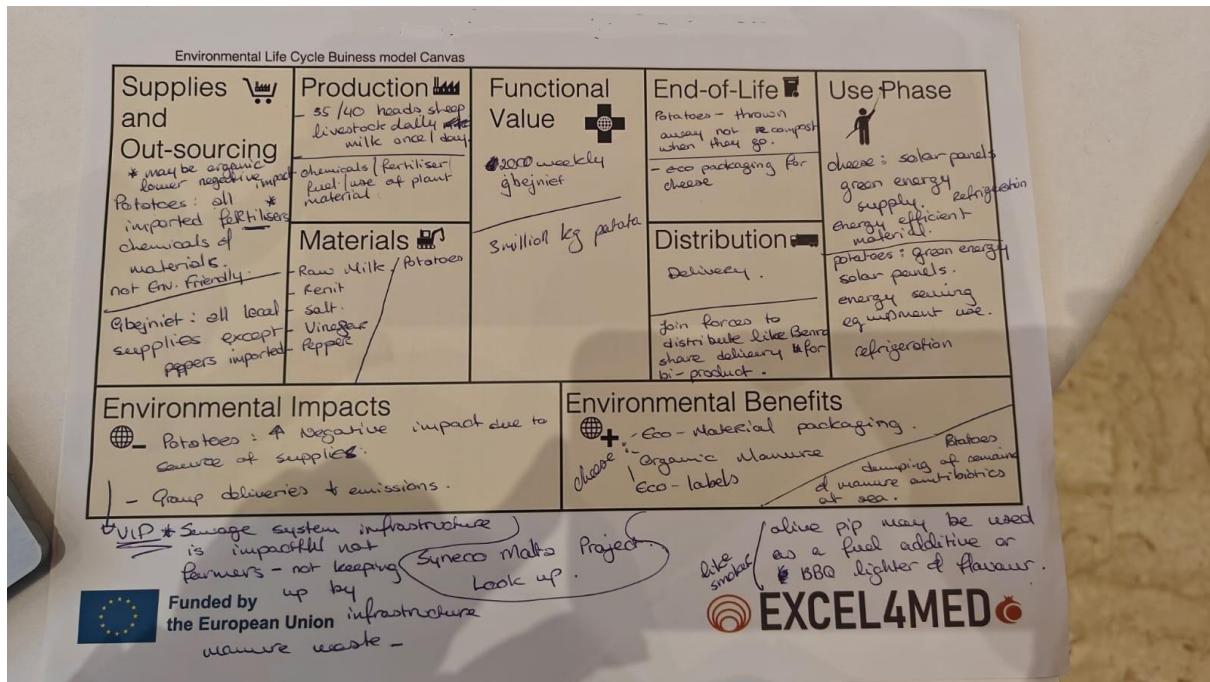


Figure 15. Example of the environmental layer as filled in by one of the participants

## 10. Functional Value

The first item to be discussed in the environmental layer was the functional value. The functional value refers to the quantitative description of the products' physical usage. To establish a product's environmental impact, we must first define the physical quantity we are referring to. It also serves as a baseline for exploring the impacts of alternative potential business models. For example, for a company producing high-end pomegranate juice the functional value would be the total number of products (and their total litres) consumed by customers in a given timeframe such as a year.

This aspect triggered the first discussion on the environmental dimension of the participant's core value proposition. How is the environment benefitting or impacted negatively in building/selling the quantity described in the functional value? Here are some of the main answers of what they produce on a yearly basis:

1. 50.000 energy bars
2. 3 million kilos of tomatoes
3. 50 tonnes of oranges
4. 600 litres of olive oil, 1000 kg of olives

Despite being a simple question, this question triggered a conversation about whether producing more of the product results in an environmental benefit / environmental impact. And whether it was possible to achieve economies of scale with regards to environmental benefit, i.e. if we had to, for example, double the production, would the environmental benefit/impact double as well, or would it be lower or higher than double?

## 11. Materials

The second aspect of the Environmental Layer is the Materials. Here the participants were asked what materials (raw and not) are used in their products, and whether these materials are renewable, recycled, or sustainably sourced. When describing the functional value in the previous step, many of the participants answered that they produce the raw material (such as citrus), as in, they harvest fruits and vegetables. So that is their raw material. We also discussed whether there are ways to reduce the raw materials used or switch to greener alternatives.

The main discussion was around the possibility of replacing the use of plastic with some substitutes. Each product used, whether it is plastic or an alternative like paper, cardboard, glass or some biodegradable materials, affect the product life cycle, from the production, particularly the packaging, to the transportation, and finally the disposal. Whatever material is used, it must ensure that the product is protected and that it arrives intact to the consumer. One other point of discussion was that while there is a lot of talk about getting rid of plastic, the feasible alternatives are few, if any. Plastic is versatile, durable, cheap and gives a product good protection in terms of hygiene. Everyone wants to get rid of plastic. In reality, it is not so easy. Two possible alternatives would be:

1. Bioplastics (Polylactic acid, PLA).
2. Mycelium (Fungal material)

There is also Polyhydroxyalkanoates (PHA) bioplastic, produced by microorganisms through fermentation of organic feedstocks, like sugars, oils, or agricultural waste. PHA has better biodegradability, flexibility, and durability than PLA but it is more expensive to produce than PLA. All these are:

- Biodegradable: Can decompose naturally in certain conditions.
- Biobased: Derived from plant materials, reducing reliance on fossil fuels.

## 12. Suppliers & Outsourcing

The third aspect of the environment layer discussed was the suppliers & outsourcing. Here the participants were asked to list down things that are necessary for their business to run smoothly, but are not generally under their full control, i.e., things supplied by suppliers & external partners such as water, energy, and machine suppliers. The common replies were:

1. Farmers harvesting the fruits and vegetables,
2. Organic farms,
3. Suppliers of environmentally friendly packaging materials.

We also discussed whether they know the environmental footprint of their suppliers and the logistics around their product production and delivery. We asked them whether they know if their suppliers are certified for sustainable practices. Here a discussion about organic farming came up. Regarding organic farming, multiple participants said that there are farms that are laser focused on sustainability however they do not qualify or did not spend the time and effort to get the organic farm certification.

Another debate was about greenwashing. Participants complained that it is not so easy to verify the green credentials of suppliers & external partners. Many companies claim that they use green/sustainable practices but it is very hard to know the full picture of how environmentally friendly they really are.

The discussion concluded that there needs to be more awareness about how to certify whether a supplier is environmentally friendly or not, as third-party audits by reputable organizations such as ISO 14001, LEED, Fair Trade, FSC (Forest Stewardship Council) and B Corp do exist.

### 13. Production

The fourth discussion of the Environmental Layer was about the Production and the environmental impact of the production activities. Participants were asked to give a breakdown of how the product is produced, and what it involves, for example, the machinery for processing, packaging, and sorting. And then to consequently document the environmental impact of such production activities.

Example:

Production Activity	Uses	Environmental Impact
Raw Material Sorting	Fuel for sorting machine	Contributes to greenhouse gas emissions and air pollution depending on the fuel type (e.g., diesel, LPG, coal).
Raw Material Processing	Chemicals	Potential for water pollution, soil contamination, and health hazards depending on the specific chemicals used.
Packaging	Cardboard	Production can involve deforestation and energy-intensive processes.
Storage In A Cool Place	Refrigerator	Contributing to greenhouse gas emissions. Refrigerants can also have a potent global warming potential if leaked.

*Table 2. Sample: Environmental impact of each product activity*

Participants were asked, for example, if a temperature-controlled room was required for their product and to list down how much energy, water, or other resources are consumed during the production. Only one participant said they have a calculation of their production's carbon footprint. The others all had some work on decreasing the environmental impact of their production but did not have detailed documentation of it.

### 14. Distribution

The next topic of the environment layer that was explored was distribution. Similar to what we did for production activities, the participants were asked to list down the environmental impact of getting the product to the customer after it is produced, listing down the transport modes of how the product arrives to the customers, taking note of the distances, the logistics and the packaging while this distribution happens. The participants were also asked to identify whether

they know of ways to optimise processes to have a more environmentally friendly distribution and to reduce waste in this phase. The most common aspects of this discussion were:

1. Shipping and the emissions from shipping and
2. Vehicle distribution and the emissions from distribution via vehicles.

Participants mentioned that they are making a big effort to electrify their vehicles. The government's subsidies help, however there are other challenges than just the cost of buying electric vehicles, with the main concern being the charging stations that the participants need to make sure their vehicles are always promptly charged. Another topic was about finding ways to optimise distribution logistics such as combining shipments from multiple customers to reduce the number of delivery trips and optimising vehicle routes.

## 15. Use Phase

The sixth discussion of the environmental layer was the use phase. Participants were asked to describe the environmental benefit/impact when the product is being used/consumed. The most common answers were:

1. To maintain their freshness and quality some products require refrigeration between the time they are bought by the customer and the time the customer consumes them. This required electricity.
2. Some products require heating up before they are used. This requires electricity or gas.
3. To ensure cleanliness some products require water to be cleaned / rinsed before they are consumed.
4. Some products require a machine (electricity) for the customer to turn them into for example a juice/smoothie.

Many of the above contribute to energy consumption and, depending on the source of electricity, have an associated carbon footprint.

## 16. End Of Life

The seventh discussion of the environmental layer was the end of life. Participants were asked to describe the environmental benefit/impact when the customer finishes using/consuming the product. The most common answers were related to the waste the product produces.

1. Carton and plastic packaging that can be recycled.
2. Empty glass bottles that can be recycled.
3. Organic waste left after consuming citrus and pomegranate products, which are fully biodegradable.

If disposed of properly, organic waste can break down naturally, returning nutrients to the soil and supporting ecosystems. And when composted, it can enrich the soil with organic matter, reducing the need for synthetic fertilizers and promoting sustainable agriculture. An interesting discussion emerged again, similar to the one described above in "Materials" on whether it is feasible to have product packages that are both environmentally friendly and also have the same physical characteristics of plastic, for example.

Another engaging discussion was about the circular economy and the need to have more and better educational campaigns so that people get more acquainted with the concept of circular economy. One idea that came up is that, on the product itself, there would be a QR Code or similar link that leads the end user to a set of tips for repurposing and composting product waste, encouraging customers to adopt sustainable circular economy practices.

## 17. Environmental Impacts

The final part of the environmental layer discussed the general environmental impacts and benefits. Starting with the environmental impacts, the participants were asked to describe their venture's impact on the environment. The answers were:

- Fertilizers have to be imported in Malta for the citrus/pomegranate to grow properly.
- Sewage waste is dumped into the sea.
- Packaging (cartons and plastic) has to be imported to Malta for the product to have its packaging.
- Machinery during production uses water and electricity.

All these use the world's resources and have a negative carbon footprint.

## 18. Environmental Benefits

Apart from the environmental impacts, the participants were asked to describe their venture's benefits to the environment. Most of the items are also linked to sustainable agricultural practices. The answers were:

1. The fact that the product is locally produced means it does not have to be imported. This reduces a lot of the environmental impact related to transporting and logistics the product and its packaging.
2. Olive and citrus trees (all trees) do not just produce fruits, but they also provide fresh air, reducing carbon dioxide. Through the process of photosynthesis trees emit oxygen. They remove climate-warming carbon dioxide from the atmosphere and help us mitigate the effects of climate change.
3. Organic manure is produced as a by-product of producing the product.
4. Fuel additive (bioethanol) is produced as a by-product of producing the product. This decreases the reliance on fossil fuels and the pressure to shift to renewable energy.

## Key Findings - Environmental Layer of TLBMC

Some key characteristics of environmental benefits/impacts of Malta's agri-food value chain were identified during the discussion about the environmental layer of the triple layered business model canvas, particularly;

- Can we achieve economies of scale with regards to environmental benefit?
- Will producing less or more of the product have less or more environmental benefit/impact?
- Replacing Plastic: Everyone wants to get rid of plastic but it is still very popular. There are alternatives like:
  - Bioplastics (Polylactic Acid, PLA).
  - Mycelium (Fungal Material)

Unlike plastic these are:

- Biodegradable: Can decompose naturally in certain conditions.
- Biobased: Derived from plant materials, reducing reliance on fossil fuels.
- Organic farming: There are farms that are laser focused on sustainability however they do not qualify or did not spend the time and effort to get the organic farm certification.
- Fighting greenwashing: It is not so easy to verify the green credentials of suppliers & external partners. Many companies claim that they use green/sustainable practices but it is very hard to know the full picture of how environmentally friendly they really are. There needs to be more awareness about how to certify whether a supplier is environmentally friendly or not, as third-party audits by reputable organizations such as ISO 14001, LEED, Fair Trade, FSC (Forest Stewardship Council) and B Corp do exist.
- Many do not have any good calculation of the carbon footprint of their production.
- Electrification of the delivery vehicle fleet is a great way of reducing the environmental impact of deliveries, however, despite government's efforts and subsidies, there are other challenges than just to the cost of buying electric vehicles, with the main concern being the charging stations needed to make sure the vehicles are always promptly charged.
- The consumer might require electricity when they use the product. This contributes to energy consumption and, depending on the source of electricity, has an associated carbon footprint.
- In line with circular economy best practices, special attention must be given to the environmental benefit/impact when the customer finishes using/consuming the product (the packaging or the organic waste that remains). Organic waste is fully biodegradable, and when composted, it can enrich the soil, replacing synthetic fertilizers. Apart from organic manure other by-products can be produced such as fuel additives (bioethanol).

## Social Layer of TLBMC

The third and last layer of the Triple Layered Business Model Canvas is the social stakeholders layer. In this layer the participants were asked to track the relationship they have with the other stakeholders, and how such relationships can be improved in such a way that a win-win is

created for everyone, for society at large, and all those individuals and organisations (governmental, NGOs, businesses) that form part of it.

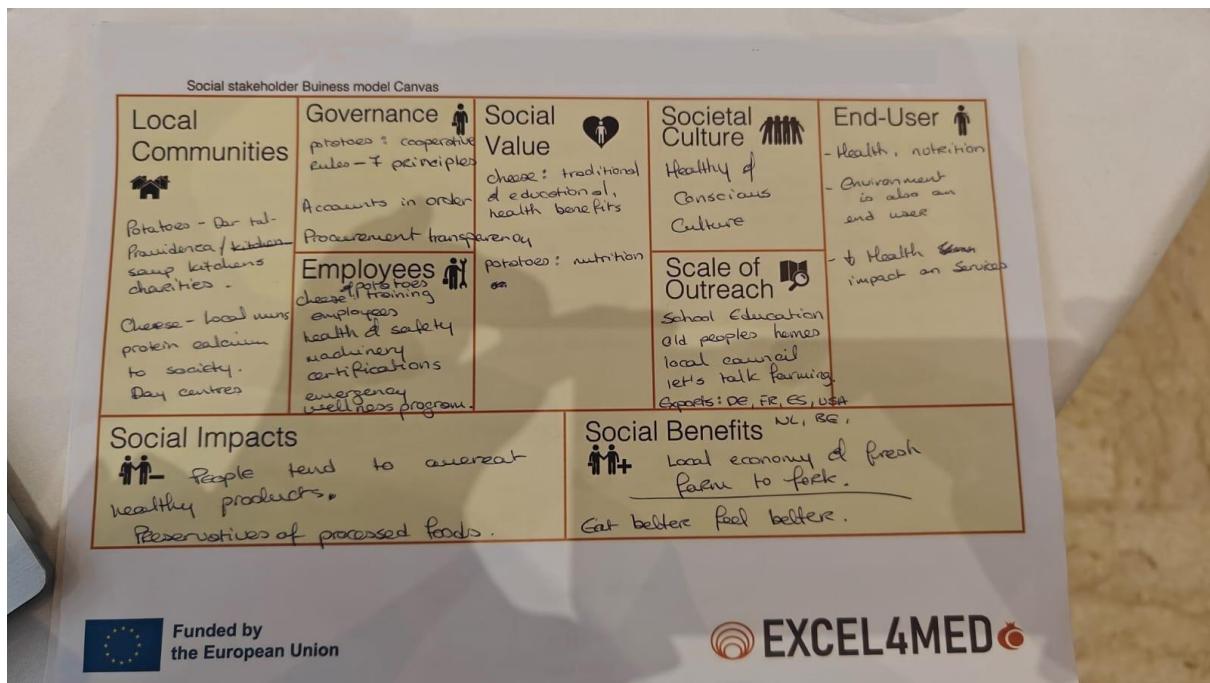


Figure 16. Example of the social layer as filled in by one of the participants

## 19. Social Value

The first aspect of the social layer is the social value. The participants were asked what benefits/value their venture brings to society and its stakeholders. Specifically, they were asked to describe their social mission statement. For example, "Our products improve the quality of life of customers, farmers and other stakeholders by ..." The most common answers were:

- Healthy benefits that are a result of eating the product.
- Pride in producing local products with local fruits.
- Awareness of the importance of fruit trees to younger generations.
- Protecting and upkeep of the green landscapes, both arable and non-arable lands.
- Producing safer foods.
- Enabling/helping others in having an efficient production of fruit-based products.

Apart from the "generic" social value that applies to any country/city in the world, there was a particular energy in the room when the points being discussed revolved around Malta's unique heritage, culture and traditions. One could see the passion in the speakers' eyes. Malta, in its village cores, has very active communities, with NGOs, band clubs, religious organisations, non-religious organisations related to local festas, local councils etc. The participants were proud that they engage in the community to promote environmental sustainability, healthy eating, and agricultural preservation.

Another key point was the importance of educating younger generations and inspiring them to value and care for Malta's agricultural heritage, green spaces, sustainable farming, and

environmental stewardship. This is done via workshops, collaborations with schools, and community outreach.

## 20. Employees

The second aspect of the Social Layer are the employees. They are at the core, at the forefront, of everything that is happening in a business, and so they are primary stakeholders in a business. The participants were asked to profile their employees.

- Are there common characteristics in the subsets of the employees?
- And what are the social needs of these profiles?
- Do they need training?
- Is health & safety taken seriously enough?
- Do you have/need a wellness programme?

The discussion and answers revolved around the importance of training. Yes, the basic training and the basic concerns are related to health and safety but nowadays employee well-being goes well beyond basic job training and basic health and safety. Mental health is one such aspect that gained popularity in recent years, especially post-Covid. Participants also mentioned that for holistic employee well-being they gave importance to:

- Personal development, not just that which is directly related to the job,
- Giving employees a sense of purpose.

## 21. Governance

The third aspect of the social layer is governance. This was one of the aspects that was least understood by the participants. When the participants were asked about how they handle governance in their business, initially there was silence until a clear definition of governance was given, with a few examples.

It was found that smaller companies and businesses, unlike more corporate environments, do not fully use the word governance in their day-to-day lives.



Figure 17. Workshop moderator explaining the importance of governance

While abiding by the national laws may be the minimum one would expect a business to do, there is much more to good governance than just following the local and national laws. Good governance in a business ensures that the company is managed in a responsible and ethical manner, adhering to a framework of rules, practices, and processes. The discussion the participants had was about the following points:

1. Transparent procurement processes,
2. Good accountancy practices,
3. Business ethics,
4. Accountability of the top management and middle management,
5. Fairness in dealing with employees, and external stakeholders/suppliers,
6. Forming part of a co-operative gave the participant a structure that helped them with governance best practices.

By upholding these principles, the business contributes positively to society, fostering trust, promoting sustainable practices, and aligning its operations with the interests of its stakeholders and the wider community.

## 22. End Users

The fourth aspect of the social layer are the end users. The participants were asked what the social impact is on the end users lives when they use/consume the product. A distinction here was made between the end user and the customer. In some cases, end users and customers are not the same.

- For the customers: The entity that pays for the product or service.
- For the end user: The person who actually uses the product or service.

Here the discussion was explicitly targeting the end user. The discussion revolved around two items:

1. The nutritional value and health benefits the end users get from agri-food products.
2. By providing the end users the ability to buy and consume environmentally friendly local products we help them in their own social quest to care for the environment around us. There are many occasions where consumers have no other choice but to buy products that are not environmentally friendly. Giving them this option is already a big contribution to the overall social value that comes from producing and selling such local products. End users feel good in supporting the local economy by buying local products that have a link, for example, to sustainable farming. This feel-good factor could also be extended by enabling the end user to engage themselves in the local community and to contribute to its growth and development.
3. High-end products, through their exceptional taste and presentation, provide not just health benefits but also a sensory experience.

## 23. Communities

The fifth aspect of the social layer is that of the communities. The participants were asked to list down the communities around their business and how their operations impacted positively or negatively on these communities. Unlike aspects like governance where the participants needed a definition of the subject, here they immediately started listing stories of how they contribute to the communities around their business. The discussion the participants had was about the following points:

1. Participant offers free school visits so students learn more about their industry.
2. Participant offers cultural activities (goat farm visits) as a by-product of the main product (cheeselets).
3. Participant visits old people's homes to give back to society.
4. Participant is active in charity events.
5. Participant support athletes. They get services for free or a reduced price.

Communities were the most popular aspect of the social layer of the business model canvas.

## 24. Scale Of Outreach

The sixth aspect of the social layer is the scale of outreach. The scale of outreach refers to the depth & breadth of the relationships a business builds with its stakeholders through its actions over time. The participants were asked to list the

- Reach of the business relationships – local to global
- Names of the number of countries they have a relationship with
- The locations of their physical stores
- The global reach of their online stores

The participants were then asked whether the way they were “using” these links creates a positive or negative social impact. The discussion initially revolved around the reach of the exported products with participants listing the UK, Germany, Spain, France, Netherlands, Belgium, USA, Canada and Japan. However the local reach, similar to the discussion about communities, was also very relevant and interesting, with participants mentioning their contribution to educational school visits, visits organised by local councils, and visits to old people's homes.

## 25. Societal Culture

The seventh aspect of the social layer is societal culture. The participants were asked to think and to list down the societal cultures that their products/services affect, and the positive/negative impact they have on these cultures. The main element of the discussion revolved around the culture of healthy living through healthy eating. Buying and consuming healthy products is the main element of such culture. Apart from the culture of healthy eating other cultures were discussed:

- Environmental care,
- Cooperation, collaboration and sharing culture,
- Social responsibility - that our actions, the good and bad actions of each one of us collectively form the cultures we live in.

## 26. Societal Impacts

The final part of the social layer discussed the general social impacts and benefits. Starting with the social impact the participants were asked to list down the social “cost” of their business, apart from the financial costs and environmental costs discussed in the previous layers. Participants were asked if their venture created any social damage / negative social impact. The discussion revolved around the following two subjects:

1. Local nutritious products tend to have a higher price. And this does not only have financial implications but also social ones. People with a lower income could be excluded from buying and consuming local nutritious products just because they cannot afford them
2. Every food product/consumable, even if they have a positive nutritional value, could lead to overeating or addiction. This could have a negative social impact.

## 27. Social Benefits

As a final step of the Triple Layered Business Model Canvas the living lab discussed the Social Benefits. The participants were asked to list down the positive social impact their venture provides. They were asked to describe how their business brought a net benefit to society. The discussion touched upon many of the aspects already listed in the previous sections of the social layer.

The main outcome of this discussion was that a well-run business, with good governance, and with solid roots in the society it operates, creates a ripple effect, starting with the professional growth of the employees, into the benefits to the communities, and finishing into the well-being of the actual citizens who consume the product. A win-win-win situation.

## Conclusion - Living Lab Malta

That concludes the journey of this Living Lab and the twenty-seven discussions (nine boxes for each of the three layers. The participants managed to take home from the Living Lab as much as we learned from them. Here is an example of the meeting notes one of the participants took, listing some key points that we described earlier in this document.

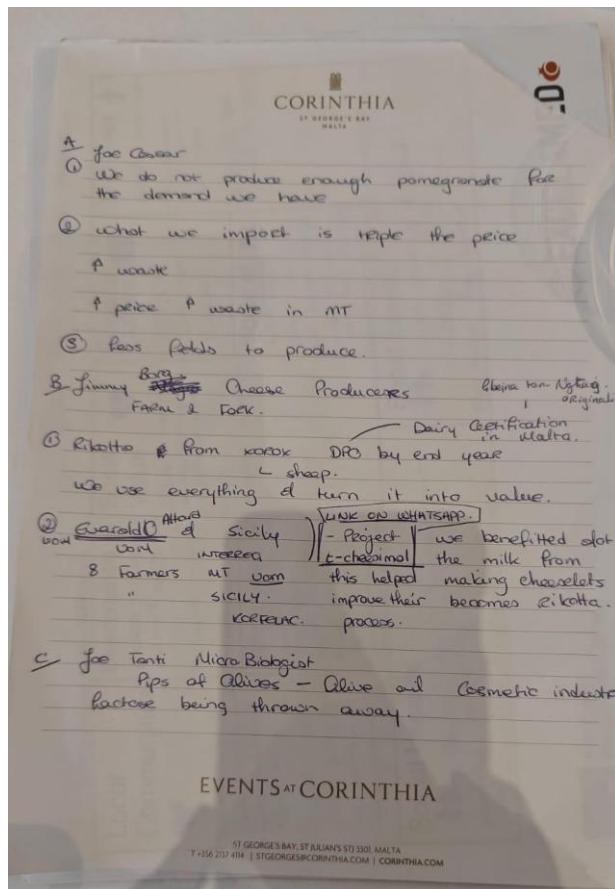


Figure 18. Meeting notes of one of the Living Lab participants

One of the things that clearly emerged from the discussions is that when filling in the environmental and social layers the participants were not as fast and conversant with the answers as they were when filling in the economical layer.

This was especially true for aspects such as governance, where some participants were not very conversant with the meaning and terminology of the word. This did not mean that they did not have good governance in their organisation, but that they do not know the same terminology of the corporate world. This is a lesson to remember for future parts of the EXCEL4MED project and beyond. The terminology of small scale producers of agri-foods.

A key discussion was about the challenge Malta has with “new water” (second-class water). Instead of sewage waste pumped out at sea this waste is treated and turned into:

- Water that is good for watering crops, trees and plants
- Fertilizer that is good for watering crops, trees and plants

Malta “New Water Project”, Times of Malta (2023), reduces pressure on groundwater use. Farmers generally rely on groundwater extracted from boreholes to irrigate their crops. However the feedback during the workshop was that while efforts are being made the project has challenges and the farmers do not have enough, or do not have access to such “New Water”.



*Figure 19. Water reservoir near agricultural fields in Malta*

**Collaboration:** A final note on a consensus that emerged from the exercise: the importance of collaboration and partnerships between different actors within the agri-food value chain to achieve the results, on economic, environmental, and social levels, that we all aspire to.

Furthermore, a strong and sustainable agri-food sector does not only benefit its direct stakeholders but also;

- Increases food security,
- Reduced reliance on imports,
- Improves and eases the development of rural communities and the society that the agri-food ventures form part of.

The Triple Layered Business Model Canvas was an invaluable tool to gather from the agri-food industry all the information above and to organise it in a way that we can clearly build upon and take further decisions in the next phases of the EXCEL4MED project.

## Living Lab in Greece - 27th September 2024

On the 27th of September 2024, an EXCEL4MED Living Lab was organised in Athens, Greece. Over twenty-five participants representing all the various stakeholders were present at the workshop. The participants were guided to fill in the Triple Layered Business Model Canvas of their product. Here are the results from this exercise.

### Economic Layer of TLBMC

- **Partners:** Local Greek farmers, distributors and retailers (local and international), logistic providers (cold chain solutions), partnerships with advertising agencies, supply networks, specialized suppliers, research institutions, corporate executives, and educational institutions.
- **Activities:** Strategic partnerships, optimizing logistics and material distribution, investing in digital advertising and marketing campaigns, organizing workshops and training programs, integrating the latest technologies and data-driven insights, promotion in supermarkets, promotion via employees in stands, influencers in social media (connection with new generation), TV programs.
- **Resources:** Effective marketing strategies aligned with business goals, utilising human resources to increase innovation and productivity.
- **Value proposition:** High-quality, authentic Greek food products, locally sourced and sustainable ingredients, offering sustainable, high-quality and functional products, products that support healthy Mediterranean diet, empowering producers through common platforms, strengthening consumer trust and increasing brand value, traditional as well as contemporary personalized products.
- **Customer relationships:** Face-to-face meetings, tasting events HORECA & Food Expo, tasting events in stores & supermarkets, meetings with cooperatives.
- **Customer segments:** Target audience includes supermarkets, local retailers, farmers/producers and export markets, building relationships with small shops and localized sales points, depending on the products (consumers >18, kids, young women, adult), small retail (e.g. kiosks), export customers through agents.
- **Channels:** Utilizing promotional campaigns in key markets (e.g. Sweden), direct sales via physical and online channels, collaboration with trusted partners to expand market reach, social media, retailers and HORECA (hotels, restaurants, cafes), Export markets interested in Greek specialties (EU, Asia, USA).
- **Costs:** 2% of annual turnover allocated to R&D activities, operational expenses include digital marketing, technology infrastructure and logistics, costs of packaging, raw materials.

- **Revenue:** Income from product sales, brand equity, workshops, and collaborations, additional growth through brand awareness and joint innovations, revenue streams vary depending on market specific demands and consumer preferences.

## Environmental Layer of TLBMC

- **Supplies and out-sourcing:** 60% imported materials, 40% locally sourced, commitment to the use of recyclable and sustainable raw materials, promotion of reusable packaging materials, accounting for at least 60% of all packaging, water from source, rent from state, recycling containers.
- **Production:** Efficient processing of raw materials into versatile and functional products, sustainable examples include PET and OPP materials used for packaging, implementation of energy-saving measures in production processes, milk products, fruit juices, annual functional value is estimated at around €6,000.
- **Materials:** Water, pet packing, ingredients.
- **Functional value:** 23.400 lt/hours water, 3 shifts, Delta report 2022.
- **End-of-life:** Recycling initiatives embedded in manufacturing processes, designing reusable and recyclable products, reducing energy consumption through the use of solar panels, avoiding excessive packaging materials to reduce waste, the expired products are returned to the company and they are sent to outsourced companies for recycling, secondary products: high nutrient value and sold as feed to animal production systems via a hired company.
- **Distribution:** Distribution to distribution centers, then to customers via vans & trucks, prioritizing environmentally friendly transportation methods to minimize carbon emissions, using strategic logistics planning to reduce resource consumption.
- **Use phase:** Delta report 2022.
- **Environmental impacts:** Water, energy, CO2, 100% renewable energy, usage of pets, physical & chemical processes, co-transfer directly from packaging, the goal till 2040: a footprint of zero CO2.
- **Environmental benefits:** Usage of renewable energy sources, optimization of water use and reduction of total consumption, optimization of distribution channels, proactive measures to minimize pollution and environmental degradation, recyclable materials packaging, use of green energy.

## Social Layer of TLBMC

- **Local communities:** Raw materials from local communities, cooperation with suppliers wherever possible, cooperation with regions, retailers, training to farmers.

- **Governance:** Values, innovation, quality excellence, structure addresses, vision, goal and strategy.
- **Employees:** Proactive management and consistent communication with employees, open and transparent communication, comprehensive employee benefits, local hiring practices to reduce working distances, continuous training programs for skills development and career growth.
- **Social value:** Development of products of high nutritional value, development and implementation of aid programs (financial and public) to uplift society, strategic collaborations with NGOs and government institutions such as EFET (Hellenic Food Authority), support for local suppliers and producers, benefits for diabetic people.
- **Societal culture:** Partnerships and alliances strengthened through meaningful collaborations, development of long-term, trusting relationships, to fire department to protect the area NATURA 2000, army support, sponsorships, social actions and donations.
- **Scale of outreach:** Strategic relationships with partners, research fundings, seminars (e.g. anxiety of workers).
- **End-user:** Quality assurance (traceability A), to comprehensively meet various consumer needs, to create pleasure and shared memories for end users, to actively participate in meeting consumer needs, 75% of products not containing sugar.
- **Social impacts:** Positive consumer satisfaction due to high-quality services, environmental pollution due to water consumption, proposals to adopt environmentally conscious measures to reduce carbon footprints and align with sustainability initiatives.
- **Social benefits:** Developing high nutritional value products for Asia, creation of measurable social benefits, including promotion of local culture, community building and ethical practices, cooperation with NGOs.

## Conclusion - Living Lab Greece

As a result of the findings obtained from the workshop held in Greece, some important conclusions were reached. The strengths of the current system are as follows.

- Existence of a comprehensive collaboration network: It has been found that the existence of a comprehensive collaboration network, from local Greek farmers to international distributors and retailers, strengthens market access and supply chain management.
- Use of modern marketing strategies: Digital marketing methods such as the use of social media, TV programs and influencers are important for constant communication with consumers.
- Diversity in income sources: Income from product sales, workshops and collaborations provides financial diversity.
- Quality and functional products: High nutritional value and personalized products compatible with the Mediterranean diet can increase consumer confidence and brand awareness.
- Renewable energy use: Renewable energy sources used in the production phase contribute to reducing the carbon footprint.
- Recycling and circular economy: The use of recyclable packaging ensures that recycling processes are managed more effectively after production and minimizes waste that harms the environment.
- Energy efficiency and water management: It is seen that energy-saving technologies are used in the production phase and priority is given to optimizing water use.
- Supporting local communities: Supporting local farmers and suppliers makes a significant contribution to national and regional development.
- Employee well-being and development: Open communication, continuous training programs and comprehensive employee benefits increase workforce satisfaction.
- Contribution to public health: Sugar-free and high nutrient products support public health and increase loyalty of the brand.
- NGO and public collaborations: Collaborations with public institutions and NGOs such as EFET (Hellenic Food Authority) provide social benefits.

The parts that need to be strengthened in the current system are summarised as follows. The high import rate increases costs and weakens sustainability targets. The R&D budget allocated from annual turnover may be insufficient for the development of innovative products and processes. It is seen that customized marketing and distribution plans are needed to increase competitiveness in exports, especially in Asian and US markets. Increased use of local

resources in raw material supply can strengthen environmental sustainability. A more comprehensive strategic roadmap is required to achieve zero carbon emissions by 2040 within the scope of the recycling and sustainability targets. Environmental sustainability initiatives and social projects need to be addressed in a more integrated way, more concrete and comprehensive metrics need to be developed to measure social impacts, and longer term career planning and work-life balance programs need to be developed for employees.

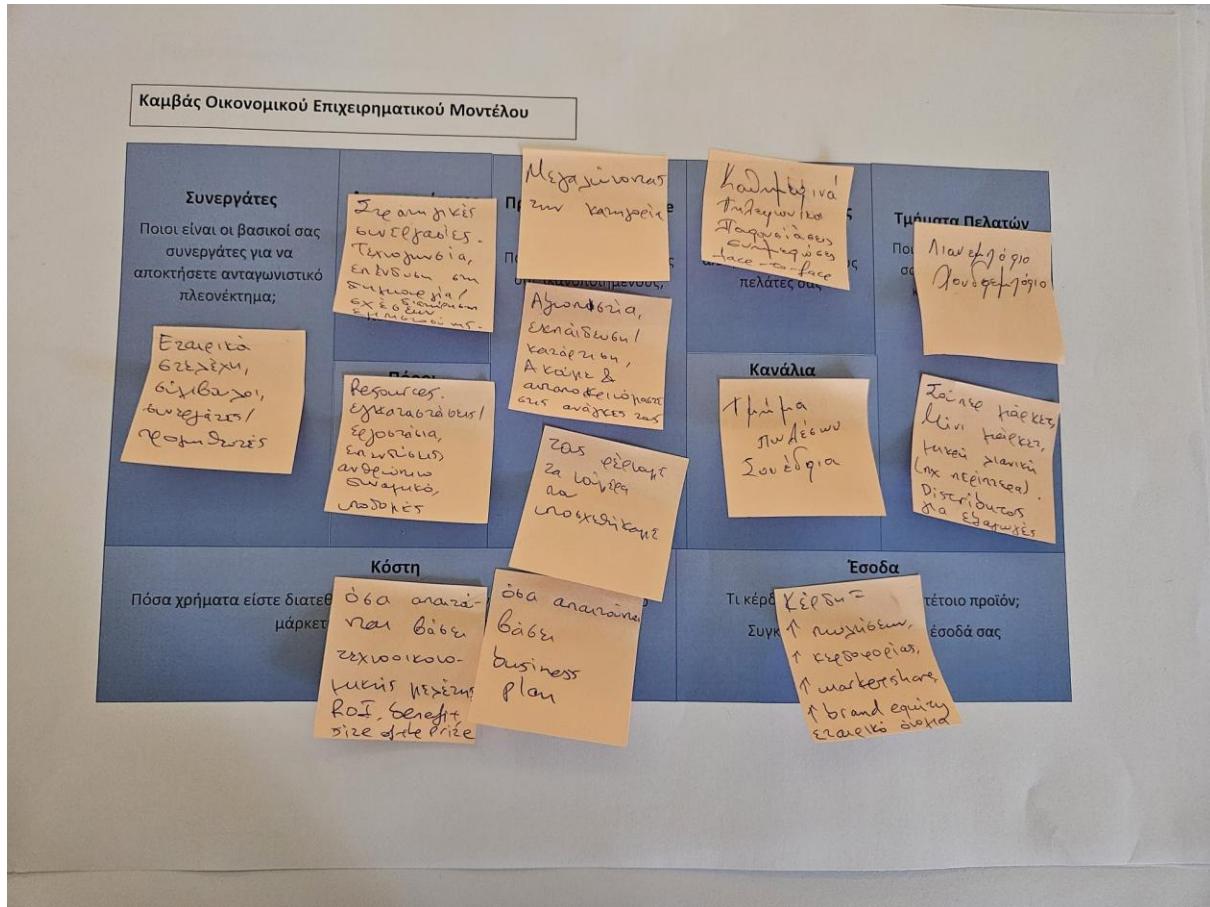


Figure 20. Example of the economic layer as filled in by one of the participants in Greece

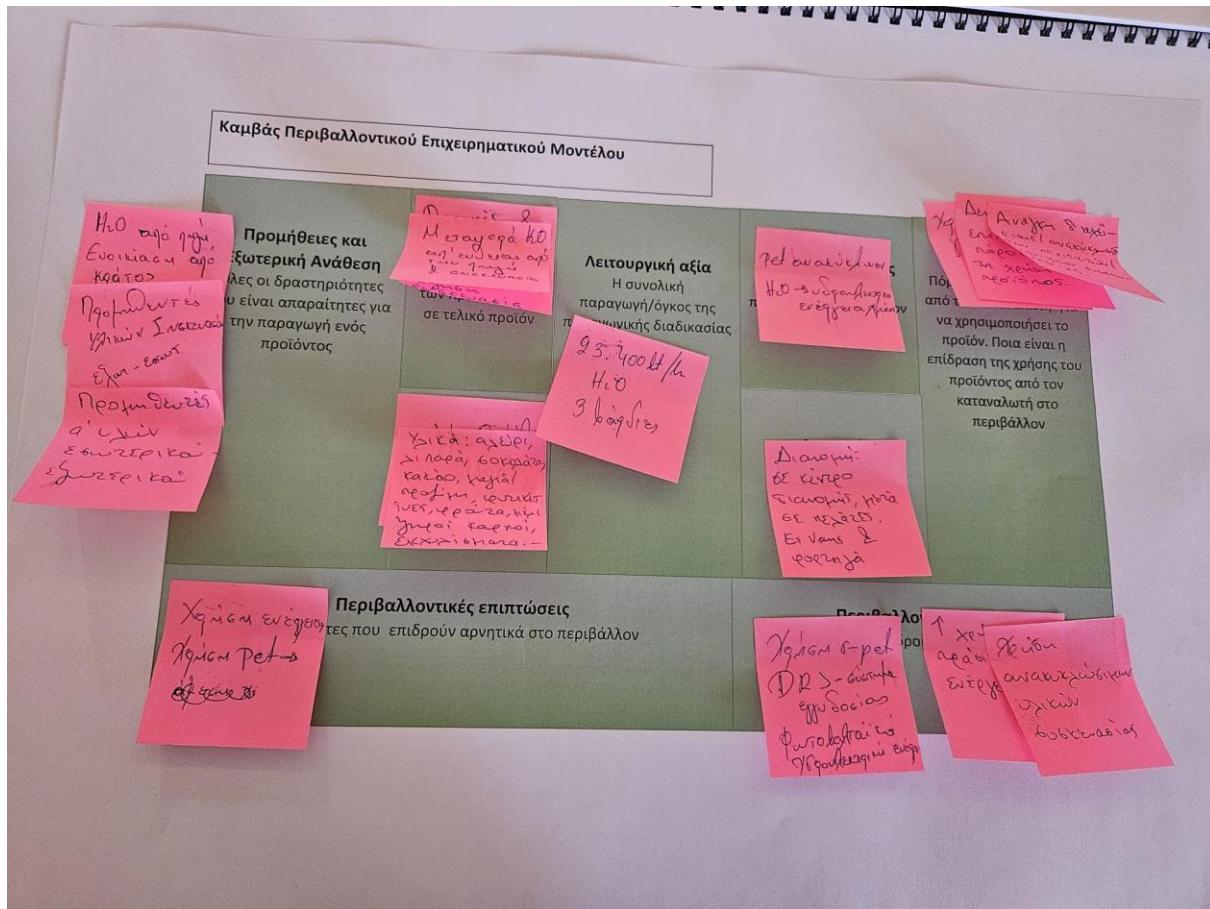


Figure 21. Example of the environmental layer as filled in by one of the participants in Greece



Figure 22. Participants filling in the Triple Layered Business Model Canvas in Greece (1)



Figure 23. Participants filling in The Triple Layered Business Model Canvas in Greece (2)

## Similarities & Differences Between Greece & Malta

Based on the outcomes from the Triple Business Model Canvas exercises in both Greece and Malta, the similarities and the differences between the two countries could be determined.

### Similarities:

- **Mediterranean climate:** Both Greece and Malta share a Mediterranean climate, characterized by hot, dry summers and mild, wet winters. This climate is conducive to the cultivation of a variety of fruits and vegetables, including olives, tomatoes, grapes, and citrus fruits.
- **Agricultural heritage:** Both countries have a long-standing agricultural tradition, with fruits and vegetables playing a significant role in their culinary heritage and economies.
- **Importance of cooperatives:** Cooperatives play a crucial role in both ecosystems, supporting farmers by providing access to resources, markets, and information.
- **Sustainability challenges:** Both countries face sustainability challenges related to water scarcity, climate change, and the environmental impact of agricultural practices.
- **Government support:** Both governments play an active role in supporting their respective agri-food sectors through policies, subsidies, and initiatives aimed at promoting sustainable agriculture and enhancing competitiveness.
- **EU members:** Both countries are EU members and active in EU projects.

### Differences:

- **Dependence on imports:** Malta has a much higher dependence on imports for fruits, vegetables and other products to meet domestic demand.
- **Water scarcity:** Malta has a bigger challenge with water scarcity, requiring bigger efficient irrigation and water management.
- **Arable land availability:** In Malta arable land is much more limited, leading to higher land costs and constraints on production of fruit and vegetables.
- **Complexity of agri-food value chain:** Greece has a relatively more complex agri-food value chain, with numerous actors involved.

While Greece and Malta share similarities as Mediterranean island nations with strong agricultural traditions, their fruit and vegetable agri-food ecosystems exhibit distinct characteristics. Greece has a larger and more export-oriented sector, while Malta relies heavily on imports and faces greater constraints due to limited land and water resources. Both countries are actively pursuing strategies to enhance the sustainability and competitiveness of their agri-food sectors.

As is happening with the EXCEL4MED project, Greece and Malta can learn from each other's experiences and adapt best practices to further strengthen their respective ecosystems and contribute to a more sustainable and resilient Mediterranean food system.

## Lessons Learned from EXCEL4MED Living Labs and Applied to EXCEL4MED Products

Once the results of the living labs and workshops were in hand, and the outcomes documented, the next step was to look into how these outcomes could be applied to future products that will come out of the EXCEL4MED project (pomegranate or/and citrus oils extracted, fortified juices, cheeses and smoothies, etc.). This was done in preparation for work in Work Package 4 (Task 4.4 Co-design of business models and investments plans).

To accomplish this the process followed was the following: All twenty-seven aspects of the Triple Layered Business Model Canvas were applied to a hypothetical premium pomegranate / citrus oil as the product. What follows are the questions and answers of these twenty-seven sections, starting with the Value Proposition of this hypothetical premium pomegranate / citrus oil.

### 1. Economic Business Model Canvas

#### 1. Value Propositions

##### **What is the product?**

-The product that we produce is a premium pomegranate/citrus oil that is both made in a sustainable way and also leaves a positive impact on the society we live in.

##### **What problem are we solving?**

-We are giving discerning consumers both luxury and sustainability on top of the benefits of the pomegranate/citrus oil itself.

##### **Why is it better than alternatives?**

-The price-product offering is competitive. A luxury product that is truly sustainable sold at a reasonable price.

##### **What unique value do we deliver to the customer?**

*-“Our premium pomegranate/citrus oil is crafted for discerning consumers who value both luxury and sustainability. Sourced from pomegranates/citrus cultivated via sustainable farming practices, our oil embodies the essence of nature's purity and potency. We employ eco-friendly extraction methods to preserve the integrity and rich nutritional profile of the pomegranate/citrus, ensuring every drop is a testament to our commitment to environmental stewardship. Beyond offering a product of unparalleled quality, we are dedicated to uplifting communities, sharing prosperity with local farmers, and implementing initiatives that contribute positively to society. With every purchase, you're not just choosing an exquisite product; you're supporting a vision for a healthier planet and empowered communities.”*

#### 2. Customer Segments

##### **Who will benefit most from our value proposition?**

-The target customer segments for this product would be individuals who prioritise luxury and sustainability in their purchasing decisions. The main customer segments identified are:

1. Health-conscious consumers willing to pay a premium for natural and organic products.
2. Environmentally conscious consumers willing to pay more for ethically sourced and produced items.
3. Individuals interested in supporting initiatives that positively impact society and uplift local communities.

It was pointed out that investing in sustainability as a core part of the business model is crucial to remain competitive and appeal to millennials and Gen Z consumers who value sustainable and innovative products. Overall, the target customer segments for this product are likely to be individuals who are willing to pay a premium for high-quality, sustainable, and socially responsible products.

### 3. Channels

**Which channels do our customers want to be reached on?**

**How are we reaching the identified customer segments?**

-To reach these customer segments effectively, the organisation should consider

1. Leveraging digital channels such as
  - a. Organisation's website
  - b. Social media
  - c. E-newsletters
  - d. Blog posts
  - e. An e-commerce / online platform (such as Amazon)
  - f. A mobile app
2. Physical stores
  - a. Those owned by the organisation
  - b. Speciality stores
  - c. Health and wellness retailers
3. Engaging stakeholders effectively, so instead of reaching the customer directly, they are reached indirectly via stakeholders

It was pointed out that for communication across the various channels to be effective and appealing to the target customer segment:

1. All the communication plans must be aligned to the organisation's social responsibility and sustainability commitments and
2. It must be as personalised as possible (not generic).

### 4. Customer Relationships

**What type of relationship does each customer segment expect us to establish?**

**How do we keep interacting with the identified customers?**

-A set of initiatives to engage the target segments were identified:

1. Social media campaigns showcasing healthy lifestyle choices and the link to our premium pomegranate/citrus oil
2. Partnerships with influencers promoting the use of our premium pomegranate/citrus oil

3. Share recipes featuring our premium pomegranate/citrus oil
4. Videos explaining the eco-friendly extraction methods used during production
5. Create and take an active part in events (such as workshops, webinars, or meetups) dedicated to the preservation of the environment, minimisation of waste, conservation of resources, and protection of wildlife habitats.  
During these events customers can learn more about the product and network with other like-minded individuals can deepen engagement and foster long-lasting relationships.
6. Highlight fair trade practices
7. Share success stories about the positive impacts made on local farming communities, and promote collaborations with nonprofit organisations that are working towards the same common goals.
8. Share educational material
9. Having feedback channels to listen to customer feedback and suggestions.

Personalisation can play a significant role here, as it helps the customers feel appreciated and valued. For this reason, each initiative mentioned above should aim to be as personalised as possible.

## 4. Key Resources

### What key resources are required to create the value propositions?

-Key resources identified as required for the value propositions of the premium pomegranate/citrus oil business include:

- Physical resources: Facilities for eco-friendly extraction methods, storage facilities for the oil, transportation infrastructure.
- Intellectual property: Trademarks for branding, patents for unique extraction methods, customer databases for targeted marketing.
- Human resources: Skilled employees for production and marketing, experts in sustainability practices.
- Financial resources: Capital for research, development of eco-friendly processes, funds for community initiatives.

## 6. Key Activities

### What key activities do our value propositions require?

-These key activities encompass various tasks and processes that are essential for translating the value propositions of the premium pomegranate/citrus oil into tangible benefits for customers, ensuring competitive positioning in the market, and fostering long-term success in delivering a high-quality, sustainable product.

Key activities identified include:

#### Value creation

- Developing eco-friendly extraction methods and continuously innovating on such methods.
- Ensuring the purity and potency of the oil.
- Implementing sustainable sourcing practices.
- Investing in community upliftment programs.

#### Packing & delivery

- Ensuring high-quality packaging and presentation.

- Efficiently delivering the premium oil to customers and the selling points.

### Adapting the product and its pricing

- Implementing pricing strategies that reflect the premium nature of the product.
- Adapting to changing consumer preferences and market trends.

## 7. Key Partnerships

### Who are our key partners and suppliers? Which key resources are we acquiring from them?

-The identified key partners and suppliers are:

- Pomegranate and citrus fruit growers: These suppliers provide the raw materials for oil extraction.
- Eco-friendly extraction equipment manufacturers: These partners provide the necessary equipment for sustainable oil extraction.
- Packaging suppliers: These partners provide high-quality packaging materials for the oil.
- Certification organisations: These partners provide certifications for sustainable and ethical practices.
- Marketing and distribution partners: These partners help promote and distribute the oil to target customers.

-The key resources acquired from these partners and suppliers can include:

- Raw materials: Pomegranate and citrus fruits for oil extraction.
- Extraction equipment: Eco-friendly equipment for sustainable oil extraction.
- Packaging materials: High-quality packaging materials for the oil.
- Certifications: Sustainable and ethical certifications for the oil.
- Marketing and distribution support: Assistance with promoting and distributing the oil to target customers.

## 7. Cost Structure

### What are the biggest costs of this business model?

-The cost structure of the producing and selling premium pomegranate/citrus oil involves the various expenses associated with creating, delivering, and capturing value for customers.

The main identified costs are as follows:

- Raw materials: Costs associated with sourcing pomegranates, citrus fruits, and other ingredients required for oil extraction.
- Production costs: Expenses related to eco-friendly extraction methods, processing, packaging, and quality control.
- Certifications and compliance: Costs for obtaining sustainable and ethical certifications to validate the product's quality and sourcing practices.
- Marketing and promotion: Expenses for advertising, branding, digital marketing campaigns, and promotions to reach target customers effectively.
- Distribution costs: Expenses related to logistics, transportation, warehousing, and inventory management for delivering the product to customers.
- Research and development: Investment in innovation, product development, and improving extraction processes to enhance product quality.
- Partnerships and collaborations: Costs associated with partnering with suppliers, manufacturers, certification bodies, and distribution channels.

- Human resources: Costs related to skilled labour for production, marketing, sales, customer service, and other operational activities.

## 10. Revenue Streams

**Where is the revenue coming from? For what value are our customers willing to pay? How are they currently paying?**

-Customers pay for such products pomegranate/citrus oil through the various channels (see the section about channels) i.e. sales to

- Direct sales from the organisation's website,
- Online platforms (such as Amazon),
- Specialty stores,
- Health and wellness retailers,
- Resellers.

## 2. Environmental Life Cycle Business Model Canvas

Once each of the nine boxes of the economic layer of the Triple Layered Business Model Canvas was applied to the hypothetical premium pomegranate/citrus oil ready we moved on to discuss the environmental layer and its nine boxes. We assessed the environmental impact and environmental benefits of creating and selling the pomegranate/citrus oil. From a high level we always kept the following question (and their answers in mind) while filling in the nine environmental layer boxes:

**How does our business model affect the environment, and what are we doing to minimise negative impacts? And how is our business model designed to ensure long-term sustainability, considering trends and potential disruptions in the fruit supply chain industry and in the world?**

-We started the environmental layer with a clarification: The environmental impact we are speaking about is not just related to carbon dioxide (CO<sub>2</sub>) emissions. This layer looks at:

- Human health,
- Depletion of natural resources, biodiversity, habitats,
- Water consumption,
- Energy consumption and renewable energy sources,
- Air quality,
- Waste generation & product end-of-life,
- Transport,
- Environmental challenges faced by local communities or regions,
- The transition toward a circular economy,
- Contribution to the United Nations Sustainable Development Goals (SDGs).

Even when speaking about CO<sub>2</sub> one needs to look at a broader perspective of all greenhouse gas emissions such as methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). And one needs to look at the whole life cycle of the product, from raw material extraction to disposal.

### 1. Functional Value

**What are we offering in terms of physical quantities? How many litres of oil will we produce? What is its environmental impact?**

In this section the actual estimation of the physical quantities required was discussed. This calculation is not mere sales/cost of sales/profit calculations but more importantly to determine the environmental impact of our product offering. Our sales quantities could positively/negatively affect the environment. According to data from research papers, 0.5% of the weight of pomegranate peels can be extracted as oil, (Kar, (2018); Ain et al., (2023)). Therefore, to produce a certain amount of oil, we can use the following formula:

Weight of pomegranate/citrus peels = (Weight of oil extracted / Oil extraction rate)

For example, if we want to produce 10 kg of pomegranate/citrus oil, we can calculate the amount of pomegranate peels required as follows:

Weight of pomegranate/citrus peels = (10 kg / 0.005) = 2000 kg

Therefore, to produce 10 kg of pomegranate/citrus oil, we would need approximately 2000 kg of pomegranate peels.

1 kg pomegranate/citrus yields 5 grams of oil.

It's worth noting that the amount of pomegranate/citrus required may vary depending on factors such as

- The extraction method used,
- The quality of the pomegranates/citrus,
- The efficiency of the extraction process.

### **Can we sell enough fresh juice in parallel?**

One interesting discussion that was discussed was the fact that if the organisation that is producing the oil is also squeezing oranges into fresh orange juice then that organisation needs to be able to sell the orange juice produced or else be constrained to process less kilograms of oranges in line with the sales of orange juice. If you have 1000 kg of oranges to both squeeze and extract the oil one can produce 400 litres of orange juice. If you sell them in 250ml bottles you would have 1600 bottles. And we might not be able to sell so much fresh juice before its expiry date.

1 kg of oranges is approximately 5 oranges.

1 orange produces 1 gram of oil which is approximately equivalent to 1 ml of oil.

1000 kg of oranges is approximately 5000 oranges.

So 5000 ml of oil would be produced with 1000kg.

## **2. Materials**

**What materials are directly used in the creation of the product?**

**How much of such material is consumed during the production of our product, and what is the environmental impact of these materials?**

-This section links to the key resources mentioned in the economic layer of the Triple-layered business model canvas.

-The materials directly used in the creation of premium pomegranate/citrus oil are pomegranate peels and citrus fruit peels. The oil is extracted from pomegranate peels, which can be a byproduct of the juicing process. Other materials could include:

- Solvents used in the extraction process
- Packaging material

### 3. Suppliers & Outsourcing

**What resources are necessary for the organisation to run smoothly, but aren't generally under your full control?**

In addition to the raw materials (pomegranate peels and citrus peels), the premium pomegranate/citrus oil organisation requires other resources that are not fully under its control but are critical for successful operation. These resources include:

**Water:** Used for cleaning, cooling, and sometimes in the extraction process itself. Access to clean and reliable water sources is vital for the organisation.

**Energy:** Electricity and fuels are required for powering machinery, lighting, refrigeration, and heating. Securing affordable and sustainable energy sources is essential.

**Transportation infrastructure:** Efficient roads, railways, ports, and airports are necessary for importing raw materials, exporting finished products, and transporting supplies.

**Regulatory compliance:** Adherence to government regulations regarding safety, hygiene, and environmental protection is mandatory. Staying updated on regulatory changes and meeting requirements is crucial.

**Distribution networks:** Establishing partnerships with wholesalers, retailers, and e-commerce platforms is necessary for selling the products. Building relationships with reputable distributors can expand the business's reach.

**Packaging materials:** Obtaining suitable packaging materials, such as bottles, labels, and cartons, is essential for protecting the product and presenting it appealingly to customers.

**Marketing and promotion:** Utilising traditional and digital marketing channels to raise brand awareness and generate leads is fundamental for increasing sales. Engaging in targeted marketing campaigns and collaborating with influencers can boost visibility.

**Insurance coverage:** Protecting against risks such as theft, fire, and liability claims is essential. Maintaining adequate insurance coverage ensures peace of mind and safeguards the organisation financially.

### 4. Production

**Key production activities and their potential environmental impact**

**How is this product produced?**

-The key production activities involved in producing premium pomegranate/citrus oil include

1. Sourcing the raw materials
2. Sorting of the raw materials may also be required to ensure that only high-quality peels are used in the extraction process.
3. Extracting the oil
4. Storing the oil in storage tanks
5. Packaging the final product using eco-friendly packaging materials to minimise their environmental impact.

The machinery requirements included that for

- Sorting of the peel
- Extracting the oil from the peel
- Packaging

The oil is extracted from the peels of pomegranates and citrus fruits in an eco-friendly way. The extracted oil is then stored at low temperatures to preserve its quality and nutritional properties. The oil is packaged in amber bottles to protect it from light and air, which can degrade its quality. The potential environmental impact of producing pomegranate/citrus oil includes:

- The use of water and energy in the production process
- The generation of waste materials from peels
- Waste generation from packaging materials.

## 5. Distribution

### What is the environmental impact of getting the products to the customers?

The environmental impact of getting premium pomegranate/citrus oil to customers involves several factors related to transportation modes, distances, packaging, and logistics. Here are some key points discussed:

1. Transportation modes and distances: The transportation of pomegranate and citrus oils to customers can contribute to greenhouse gas emissions (GHGE) depending on the modes used and distances travelled. Choosing more sustainable transportation options can help reduce the carbon footprint associated with product distribution.
2. Packaging: Packaging materials used for pomegranate/citrus oil can also have environmental implications. Opting for eco-friendly packaging solutions, such as paperboard cartons over PET bottles, can help reduce the environmental impact of the product. Minimising plastic packaging and using recyclable materials can further mitigate environmental harm.
3. Logistics: Efficient logistics management plays a crucial role in reducing the environmental impact of product distribution. Optimising routes, consolidating shipments, and implementing sustainable practices in warehousing and distribution centres can help minimise energy consumption and emissions associated with logistics operations.
4. Environmental considerations: The pomegranate industry has historically had a negative environmental impact due to high pesticide use, irrigation requirements, nitrogen fertilisers, low

land yield, and occasional plastic packaging. By addressing these factors and adopting sustainable practices throughout the supply chain, companies can work towards reducing their overall environmental footprint. By considering the environmental impact at each stage of the distribution, implementing sustainable practices in transportation, packaging, and logistics, and investing in eco-friendly technologies, the organisation can ensure that the overall environmental footprint of premium pomegranate/citrus oil products be kept to a minimum.

## 6. Use Phase

**What is the environmental impact when the end user uses the product?**

-No environmental impact was noted when the customer uses the product premium pomegranate/citrus oil. The product for example does not need to be heated or post-processed to be used.

## 7. End Of Life

**What happens when the end user finishes using the product?**

**How does our product's disposal or recycling affect the environment?**

**How can we reduce the environmental impact of its disposal?**

**Are there opportunities for circular economy solutions? (recycling, change of use etc.)**

-When the contents of a premium pomegranate/citrus oil bottle finish, a few environmental impacts may occur:

1. Disposing of the empty bottle can contribute to waste accumulation. Recycling glass bottles is a greener option compared to plastic, as glass can be recycled in most cities.
2. The transportation of empty glass bottles can contribute to carbon emissions and energy consumption.

Giving client ideas for upcycling: Repurposing empty bottles can reduce environmental impact. Customers can use empty bottles for DIY projects, such as creating oil diffusers or homemade cleaning products. By incorporating these practices into their routine, consumers can play a significant role in reducing the environmental impact associated with the disposal of premium pomegranate/citrus oil bottles and contribute to sustainable waste management efforts. The aim is to be an active contributor to the circular economy. As natural resources are limited and have a precious value, nothing should be lost, food waste prevented and nutrient, water and energy cycles closed as far as possible by reusing, recycling or recovering.

## 8. Environmental Impact

Even if our production and sales of premium pomegranate/citrus oil is super environmentally friendly there are still environmental impacts that pose challenges. These impacts, while minimised through sustainable practices, are important to acknowledge and address continuously.

**Resource consumption (water, land):** The cultivation of pomegranates and citrus fruits, despite sustainable agricultural practices, requires significant water resources. Even if organic farming is preferred, while reducing the use of synthetic pesticides and fertilisers, might require more land to achieve the same yield levels as conventional farming, potentially leading to habitat disruption or pressure on undeveloped lands.

Energy use in production and processing: The extraction and processing of oils from pomegranates and citrus fruits are energy-intensive processes, especially if the goal is to maintain a high-quality bioactive profile of the oil. Even when renewable energy sources are employed, the infrastructure for such energy solutions has its environmental footprint, including the production and disposal of solar panels and possibly wind turbines.

Packaging and transportation: Despite opting for eco-friendly packaging solutions, such as biodegradable or recyclable materials the production of these materials still consumes resources and energy. Furthermore, the transportation of premium oils, despite efforts to minimise carbon footprints, contributes to greenhouse gas emissions. The logistics involved in distributing a niche product like premium pomegranate/citrus oil requires complex, multi-modal transport solutions, which can dilute some of the environmental benefits gained from local, sustainable practices.

There is also a remote challenge to biodiversity if the oil's success leads to monocultures. We'll not expand on this much due to its remoteness. Despite these challenges, the key to mitigating bad environmental impacts lies in continuous innovation, monitoring, and adaptation of practices, namely

- Investing in more efficient water use technologies
- Exploring alternative energy solutions for production processes
- Developing more sustainable packaging materials
- Implementing crop rotation and polyculture farming

## 9. Environmental Benefits

The production and sales of premium pomegranate/citrus oil, when managed within a framework of environmental sustainability, can yield significant positive environmental benefits. These benefits stem from a commitment to sustainable agriculture, energy efficiency, waste minimization, and biodiversity conservation, underpinning a business model that not only seeks profitability but also contributes to the health of our planet.

**Waste reduction and valorisation:** The process of extracting oil from pomegranate and citrus peels demonstrates a commitment to minimising waste by valorizing by-products of fruit processing. Utilising these peels, which would otherwise be discarded, not only reduces waste but also creates a valuable product, exemplifying the principles of a **circular economy**. This approach decreases landfill use, reduces greenhouse gas emissions associated with waste decomposition, and promotes the efficient use of resources.

Reducing Carbon Footprint: Efforts to minimise the carbon footprint of the production and sales process, such as

- Using renewable energy sources in oil extraction and processing
- Optimising logistics to reduce transportation emissions

contribute to the fight against climate change. These actions demonstrate the venture's commitment to reducing its environmental impact and leading by example in the transition to a low-carbon economy.

Assuming a strict confirmation that all the farmers growing pomegranate and citrus use sustainable agriculture practices the venture would be contributing to better soil fertility, better water quality and better water conservation (through drip irrigation).

In conclusion, the environmentally friendly production and sales of premium pomegranate/citrus oil provide a model for sustainable business practices that prioritise the planet's health. By integrating sustainability into every aspect of the operation, from field to consumer, the venture not only offers a high-quality product but also contributes to the broader goals of environmental conservation, resource efficiency, and climate change mitigation.

### 3. Social Stakeholder Business Model Canvas

Now that the economic and the environmental canvases were completed for this hypothetical premium pomegranate/citrus oil the next step was to track the relationships with the organisation's stakeholders and their impact. While doing this we kept one question in mind:

#### **How can we create a win-win for everyone, society at large included?**

-The aim here is to build solid, long lasting relations with the neighbouring communities and stakeholders. Participating in community events and sponsoring local causes can foster positive relationships and minimise any conflicts.

#### **1. Social Value**

**How does production and sales of pomegranate/citrus oil create social value for its stakeholders, and for society more broadly? What's the (social) mission statement of the organisation?**

The production and sales of premium pomegranate/citrus oil have the potential to create significant social value for stakeholders and society at large, by embedding

1. Sustainability
2. Community engagement
3. Health and wellness

into its core business practices.

**For local farmers and suppliers:** The organisation creates social value by engaging local farmers and suppliers in fair trade practices, ensuring they receive a fair and stable income. By prioritising local sourcing, the organisation supports the local economy, encourages sustainable farming practices, and reduces the carbon footprint associated with transportation. This approach not only improves the livelihoods of local farmers but also promotes biodiversity and soil health through sustainable agricultural practices.

**For employees:** By offering fair wages, safe working conditions, and opportunities for training and professional development, the organisation invests in its workforce, creating social value through job satisfaction, skill development, and career advancement. Employees become part of a mission-driven organisation, where their work directly contributes to environmental sustainability and community well-being.

**For consumers:** The organisation creates social value by providing consumers with a high-quality, natural product that is ethically sourced and produced. By educating consumers about the health benefits of pomegranate/citrus oil and the importance of sustainable, ethical consumption, the organisation can influence healthier lifestyle choices and raise awareness about environmental and social issues.

**For the broader community:** Beyond its immediate stakeholders, the organisation contributes to the broader community by fostering economic development, environmental conservation, and social cohesion. Through community engagement initiatives, such as educational programs, environmental conservation projects, and support for local cultural events, the organisation strengthens community ties and promotes a sense of shared purpose and responsibility.

**For the environment:** The environmental practices embedded in the production process — such as waste reduction, energy efficiency, and sustainable sourcing — extend social value to society by preserving natural resources, reducing pollution and waste, and combating climate change, contributing to the long-term well-being and resilience of the planet.

Our social mission statement:

Given the multi-dimensional impact of the organisation's activities, we chose the following as a fitting social mission statement:

*"To empower our community and promote environmental sustainability by harnessing local agricultural waste to produce and market premium pomegranate/citrus oil. We are committed to ethical practices, from farm to bottle, ensuring health benefits for consumers and sustainable livelihoods for our suppliers, while fostering a culture of social responsibility and environmental stewardship."*

This mission statement encapsulates the organisation's commitment to creating social value across its stakeholder spectrum — from supporting local agriculture and protecting the environment to promoting health and wellness among consumers. It underscores a holistic approach to business, where economic success is intertwined with social and environmental progress.

## 2. Employees

**Employees are primary stakeholders. The venture requires a skilled workforce. What is the profile of such employees? What do they need? Just training and health & safety, what else?**

Employees, as primary stakeholders in an organisation producing premium pomegranate/citrus oil, play a pivotal role in its success and sustainability. The workforce in such an organisation encompasses a diverse range of roles,

1. Agricultural specialists who understand sustainable farming practices
2. Skilled technicians overseeing the extraction and production of the oil
3. Sales and marketing professionals who communicate the product's value and sustainability ethos to the market.
4. Research and development personnel working on product innovation.
5. Sustainability experts ensuring that practices meet environmental and social standards.

The organisation offers more than just a paycheck; it provides a sense of purpose, opportunities for growth, and a working environment that reflects the organisation's values of sustainability, fairness, and community engagement. To achieve a win-win scenario, the organisation should focus on several key areas:

**Fair compensation and benefits:** Ensuring that employees are fairly compensated, not just in terms of market-competitive salaries but also through benefits that enhance their well-being, such as health insurance, retirement savings plans, and access to wellness programs. Fair compensation is fundamental in attracting and retaining skilled employees, particularly in specialised technical roles critical to the organisation's operations.

**Training and development:** Investing in comprehensive training programs and continuous professional development opportunities is crucial. These initiatives can help employees enhance their technical skills, stay abreast of the latest sustainable practices, and progress in their careers. Training not only builds a more capable and versatile workforce but also signals the organisation's commitment to its employees' growth and job satisfaction.

**Work environment and culture:** Creating a positive work environment that reflects the organisation's values is essential for employee engagement and retention. This includes fostering a culture of inclusivity, transparency, and open communication, where employees feel valued and empowered to contribute ideas. Encouraging a team-oriented atmosphere that supports collaboration and innovation can further align employees with the organisation's mission and values.

**Employee well-being:** Recognising the importance of work-life balance and providing support mechanisms to help employees manage personal and professional demands. This might include

- Flexible working arrangements,
- Support for mental health,
- Initiatives that encourage community involvement and environmental stewardship.

All this reinforces the organisation's commitment to social impact.

**Participation in decision-making:** Involving employees in decision-making processes, especially those that affect their work or the organisation's direction, can enhance their sense of ownership and commitment. This participatory approach aligns with the cooperative and collaborative principles that underpin the organisation's model, further embedding the social impact ethos within its workforce.

By focusing on these areas, the organisation not only ensures that its employees are skilled, motivated, and aligned with its mission but also contributes to a broader social impact through its workforce. Employees become ambassadors of sustainability and ethical practices, both within the organisation and in the wider community, fostering a culture that values environmental stewardship, social responsibility, and economic viability. This holistic approach to employee engagement and development is instrumental in building a resilient and sustainable business capable of achieving its goals while contributing positively to society.

### 3. Governance

Apart from the economic, environmental and social aspects the governance aspect is a must to have a complete blueprint for solid business models for the organisations engaged in the creation and sale of premium pomegranate/citrus oil. The unique challenges and opportunities of this organisation demand a thoughtful approach to governance.

We discussed that the governance structure must be designed to

1. Facilitate effective decision-making
2. Ensure transparency
3. Balance the pursuit of profit with broader social, environmental, and economic responsibilities.

It was mentioned that the **cooperative model** emerges as a possible candidate organisational structure for these entities, offering a framework that aligns closely with the values and objectives of the EXCEL4MED project.

A cooperative governance structure is characterised by its democratic decision-making policies, where each member has a voice in the strategic directions of the business. This approach ensures that decisions regarding the sourcing, production, and distribution of premium oils are made in a manner that reflects the collective interests of all stakeholders, including producers, workers, and consumers. Such a model fosters a deep sense of ownership and accountability among members, driving a commitment to excellence and sustainability that is essential for success in the competitive Mediterranean food market.

Transparency is a cornerstone of effective governance within a cooperative. It ensures that all members have access to critical information regarding the business's operations, financial health, and strategic plans. This openness builds trust among members and external stakeholders alike, reinforcing the cooperative's commitment to ethical practices and sustainable development. Transparency also facilitates informed decision-making, enabling members to make choices that support long-term resilience and profitability.

Balancing the push for profit with the need to uphold social and environmental values is a crucial aspect of governance in organisations producing premium pomegranate/citrus oil. The cooperative model naturally supports this balance by prioritising the welfare of its members and the community over mere financial gains. Profits are often reinvested into the business to drive innovation, improve product quality, and enhance sustainable practices, or distributed among members in a fair and equitable manner. This approach not only contributes to the economic stability of the cooperative but also promotes a healthier, more sustainable food system.

In summary, for organisations within the EXCEL4MED framework, adopting a cooperative governance structure offers a powerful means to achieve their goals. By emphasising democratic decision-making, transparency, and a balanced approach to profitability, cooperatives can thrive in the dynamic Mediterranean food sector. This organisational model not only supports the production and sale of premium pomegranate/citrus oil but also embodies the principles of sustainability, resilience, and fairness that are at the heart of the EXCEL4MED project.

## 4. End Users

### What's the social impact on the lives of the end user?

The social impact of customers using premium pomegranate/citrus oil can extend beyond the mere consumption of the product to encompass several significant benefits:

**Supporting sustainable agriculture:** Customers have the opportunity to contribute to promoting sustainable agriculture practices. This support helps in the conservation of biodiversity, protection of soil health, and reduction in water usage and pollution, contributing positively to the environment and, by extension, society.

**Enhancing community livelihoods:** Buying the premium helps customers to support trade practices and the livelihoods of local farmers and workers. These practices ensure fair wages and working conditions, leading to improved quality of life and economic stability for communities involved in the production process.

**Promoting health and wellness:** The premium pomegranate/citrus oil is known for its health benefits, including anti-inflammatory properties, antioxidants, and heart health benefits. By choosing this product, customers are investing in their health and wellness, contributing to the broader societal benefit of a healthier population.

**Encouraging ethical consumption:** Customers of premium pomegranate/citrus oil have the opportunity to become advocates for ethical consumption, influencing others by example to make choices that are socially and environmentally responsible. This ripple effect can lead to increased awareness and adoption of sustainable products, amplifying the social impact.

**Fostering innovation and education:** Through the purchase of the premium pomegranate/citrus oil the customers have the opportunity to push more research and development for further sustainable products and processes. Customers thus are indirectly contributing to innovation and to the dissemination of knowledge regarding sustainable practices, health benefits, and more, which can educate and benefit broader segments of society.

In essence, the social impact of using premium pomegranate oil extends well beyond the individual, touching on various aspects of sustainability, community development, health, ethical consumption, innovation, and international collaboration. Each purchase becomes a statement in support of these broader goals, contributing to a more sustainable and equitable world.

## 5. Communities

**What is the social impact to the communities within which the organisation exists? Beyond profitability, how does our business model contribute to the economic stability or growth of our communities? What is the result of the organisation's relationships with the other stakeholders and the community in which the organisation exists**

The operations of an organisation producing premium pomegranate oil have the potential to generate substantial social impacts on the communities within which it operates. These impacts are multifaceted, touching upon economic, environmental, and social dimensions:

**Economic empowerment and job creation:** The organisation's activities can significantly contribute to local economies by creating jobs both directly within the organisation and indirectly through the supply chain. Employment opportunities in farming, production, and distribution help elevate the economic status of community members, leading to improved living standards.

**Skill development and capacity building:** By offering training and development programs, the organisation can enhance the skill sets of local workers and farmers, thereby increasing their employability and productivity. This investment in human capital not only benefits the individuals involved but also strengthens the community's overall economic resilience.

**Social cohesion and community development:** The cooperative model inherently promotes social cohesion by involving community members in decision-making processes and ensuring that profits are distributed equitably. This inclusive approach can strengthen community bonds, foster a sense of belonging, and encourage collective action towards common goals.

**Health and well-being:** By producing a health-oriented product like premium pomegranate/citrus oil and advocating for its benefits, the organisation can contribute to the well-being of the community. Educational initiatives about nutrition and healthy living can have ripple effects, leading to improved public health outcomes.

**Relationships with other stakeholders:** The organisation's relationships with other stakeholders can amplify its social impact. Collaborations can lead to community-wide projects such as infrastructure development, educational programs, and environmental conservation initiatives. These partnerships not only leverage resources and expertise but also ensure that the organisation's efforts are aligned with the community's needs and priorities.

**Cultural preservation and promotion:** In regions of Greece and Malta where pomegranate/citrus cultivation is a traditional practice, the organisation can play a role in preserving and promoting cultural heritage. This might involve supporting local festivals, funding cultural projects, or ensuring that traditional farming practices are maintained and valued.

In conclusion, the social impact of an organisation producing premium pomegranate oil within a cooperative and sustainable framework extends well beyond the confines of the business itself enabling the organisation to become a cornerstone of community development and resilience.

## 6. Scale Of Outreach

**Describe the depth & breadth of the relationships the organisation builds with its stakeholders through its actions over time. Will these relationships be local, global, glocal? How can the organisation use these links for good (not only profit)?**

The depth and breadth of the relationships the organisation producing premium pomegranate oil builds with its stakeholders are pivotal to its long-term success and for its positive social impact.

Through its actions over time, the organisation can cultivate connections that are at once local, global, and "glocal" — a reflection of its ability to think globally while acting locally.

It was noted that it can start locally, from Greece, Malta and France. These relationships span a wide range of stakeholders, including local farmers, employees, customers, NGOs, governmental bodies, and international partners, each offering unique opportunities for mutual growth and societal benefit.

**Local relationships:** At the local level, the organisation's ties to farmers, local workers, and community members form the foundation of its operations. These relationships are characterised by direct support through fair trade practices, employment opportunities, and community development initiatives. By prioritising local sourcing of raw material and investing in community well-being, the organisation not only secures its supply chain but also contributes to the economic and social fabric of the regions in which it operates. Such grassroots connections ensure resilience, foster loyalty, and enhance the organisation's social licence to operate.

**Global relationships:** On a global stage level, relationships with international customers, partners, and sustainability networks extend the organisation's reach and social impact.

These connections facilitate the exchange of ideas, best practices, and innovations, enabling the organisation to stay at the forefront of sustainable and ethical business practices. Global relationships also open up markets for premium products, allowing the organisation to advocate for sustainability and social responsibility on a larger scale. Through these ties, the organisation can eventually influence global value chains, setting standards for ethical production and consumption.

**Glocal relationships:** The "glocal" aspect emerges as the organisation leverages its global insights to enhance local operations and vice versa. Collaborations with international NGOs and research institutions can bring advanced technologies and practices to local communities, improving productivity and sustainability. Conversely, the unique local knowledge and practices can be shared globally, contributing to the broader discourse on sustainable agriculture and ethical business.

Using links for good: Beyond profit, these diverse relationships enable the organisation to act as a catalyst for positive change.

- Locally, it can use its influence to support educational programs, environmental conservation, and public health initiatives, directly benefiting the communities it is part of.
- Globally, the organisation can advocate for fair trade, environmental protection, and social equity, influencing policy and consumer behaviour. By actively participating in and contributing to sustainability standards and certifications, the organisation helps elevate practices across industries.

Moreover, the organisation can leverage its network to facilitate knowledge exchange and capacity building, ensuring that innovations in sustainability and ethical practices are shared

and adopted widely. This not only enhances the organisation's reputation but also contributes to a ripple effect of positive impact across communities and industries worldwide.

In essence, the relationships an organisation builds through its commitment to sustainability, equity, and community engagement are both a strategic asset and a mechanism for widespread societal benefit. These connections, nurtured over time and across scales, enable the organisation to achieve its goals while contributing to the global agenda for sustainable development.

## 7. Societal Culture

**What's the culture within which the organisation exists? And vice-versa what's the impact of our organisation on this culture?**

To achieve the vision articulated by the EXCEL4MED project, the organisation producing premium pomegranate/citrus oil must cultivate and operate within a culture characterised by

1. Sustainability
2. Inclusivity
3. Innovation
4. Collaboration

The organisation must embody and promote the above and in doing so, it not only achieves its operational goals but also contributes to shaping a broader societal cultures that values

1. Environmental care
2. Community well-being
3. Healthy living.

Through its actions and successes, the organisation can inspire change, leading by example and encouraging others to adopt similar values and practices. Thus its internal culture not only influences its operations but also impacts the broader community. Conversely, the organisation's practices and success can reinforce and spread these cultural values, creating a symbiotic relationship between the organisation and the culture within which it exists.

**The culture required for the organization:**

**Sustainability and environmental stewardship:** The organisation needs to foster a deep commitment to environmental care, where every decision and action is evaluated for its environmental impact. This includes sustainable sourcing practices, minimising waste, and investing in renewable energy. For instance, by adopting a zero-waste approach in processing pomegranate and citrus fruits, where all parts of the fruit are utilised for various products, the organisation sets a standard for environmental responsibility.

**Inclusivity and fair cooperation with stakeholders:** A culture of inclusivity ensures that relationships with farmers, employees, and community members are built on fairness, respect, and mutual benefit. This involves fair trade practices with farmers, ensuring they receive a fair share of profits, and engaging in open dialogue with communities to address their needs and concerns. An example of this is the organisation's collaboration with local farmers to implement organic farming practices, enhancing both the quality of the produce and the health of the land.

**Innovation in healthy living:** The organisation should promote a culture that values health and wellness, both internally among employees and externally in the products it offers and the messages it communicates. By advocating for the health benefits of pomegranate/citrus oil and supporting initiatives that encourage healthy eating and lifestyles, the organisation can influence consumer behaviour towards more health-conscious choices.

**The impact of the organization on culture:**

**Promoting environmental awareness:** As the organisation practices and advocates for environmental stewardship, it can play a pivotal role in raising awareness about sustainability issues. Its success stories and practices can inspire other businesses and individuals to adopt more environmentally friendly habits, contributing to a culture that prioritises the planet's health.

**Elevating community well-being:** Through its inclusive practices and fair cooperation with stakeholders, the organisation contributes to a culture of equity and community support. This can lead to stronger community bonds and a shared sense of responsibility for each other's well-being. The organisation becomes a model for how businesses can contribute positively to community development, setting a precedent for others to follow.

**Spurring a shift towards healthy living:** By aligning its products and branding with the benefits of healthy eating, the organisation can influence a broader cultural shift towards health and wellness. Success in this area can encourage other food producers to innovate towards healthier products, gradually shifting consumer preferences and norms towards health-conscious eating.

## 8. Social Impacts

**Apart from the financial costs and environmental costs, what is the social cost of the organisation? Is its activity causing any damage/negative impact?**

The concept of social cost encompasses the broader impacts of an organisation's activities on society, beyond the immediate financial and environmental costs. An organisation producing premium pomegranate oil, especially within a framework emphasising sustainability, transparency, and equity, the goal is to minimise negative social impacts. However, it's crucial to acknowledge and address any potential social costs that might arise, despite the best intentions.

**Cultural and social displacement:** One potential social cost could involve the unintended displacement of traditional practices or cultural heritage. If the organisation's demand for pomegranate/citrus cultivation leads to monoculture farming, it might displace diverse agricultural practices that are part of the region's cultural heritage. This could also lead to a loss of biodiversity, which, while also an environmental issue, has significant cultural and social ramifications. Such scenarios might disrupt local food markets and could affect food security and diversity. Such a shift could inadvertently harm smaller farmers who might not be able to compete or adapt quickly enough to the changing market demands.

**Dependency:** Dependency is another potential social cost. By becoming the primary buyer of pomegranates/citrus from local farmers, the organisation could create a dependency situation where farmers are at risk if the organisation changes its business strategy or faces economic downturns. This could destabilise the local farming economy and reduce community resilience to external shocks.

This is where a strong ecosystem comes in. To mitigate these potential social costs, the organisation must be a catalyst for stakeholders to engage in continuous dialogue and to address concerns proactively. Implementing diversified sourcing strategies can help prevent cultural and economic displacement, ensuring that traditional practices are preserved while still promoting sustainable agriculture.

Furthermore, the organisation can

- Invest in community development initiatives that go beyond its immediate business needs, such as supporting local education, healthcare, and infrastructure projects.
- Support crop diversification programs and provide technical assistance to small farmers to help them tap into the premium market without jeopardising their economic stability.

These efforts can help build more resilient communities that are better equipped to adapt to changes and mitigate dependency risks. It was noted that while there are potential social costs associated with the production of premium pomegranate/citrus oil, careful planning of a holistic approach together with stakeholder engagement aimed at the well-being of the communities and ecosystems it interacts with can reduce these risks.

## 9. Social Benefits

**Does the organisation producing the premium pomegranate/citrus oil bring a net benefit to society? Explain the societal benefits.**

Apart from the economic (job creation, fair trade, economic growth) and environmental (sustainable farming practices, reducing carbon footprint, zero-waste approach) dimensions already mentioned, the organisation's operations have a social dimension. Here are the societal benefits discussed:

**Community well-being:** Investments in community development initiatives, such as education, healthcare, and infrastructure, directly enhance the quality of life for community members.

**Health and wellness promotion:** The production and promotion of premium pomegranate/citrus oil, known for its health benefits, contribute to raising awareness about healthy lifestyle choices and improving public health.

**Cultural preservation:** Supporting traditional farming practices and celebrating local heritage through the product and its marketing can help preserve and promote cultural identities.

**Innovation and knowledge sharing:** The organisation can become a hub for innovation in sustainable agriculture and production techniques, sharing knowledge and best practices with other businesses and the community.

**Promotion of high standards for ethical & sustainable production:** Through its high standards the organisation can influence the supply chains to adopt more responsible practices, contributing to the efforts to achieve sustainability and social equity.

**Social cohesion:** Engaging stakeholders in decision-making processes and sharing the benefits of success fosters a sense of community and collective responsibility, strengthening social bonds and resilience.

**A blueprint for others to follow:** The organisation demonstrates that the pursuit of profit can go hand in hand with contributing positively to the planet and its people, setting a precedent for ethical and sustainable business practices.

## Gaps & Recommendations for Improving the Current Business Models

Based on the outcomes from the Living Labs and the analysis conducted thereafter a set gaps in the current business models have been identified. This section lists down these gaps, along with specific recommendations. Gaps identified:

1. **Limited emphasis on sustainability:** The focus on sustainability is increasing, however the current business models still prioritise economic aspects, with insufficient focus on environmental and social dimensions.
2. **Lack of innovation:** Innovation is always challenging. One must enter uncharted territories to innovate. The willingness is there, but there is a need for increased investment in research and development (R&D), and increased government support to drive innovation and the creation of more sustainable products and processes.
3. **Inadequate stakeholder engagement:** Engagement in the ecosystem is often left ad-hoc. Stakeholders do engage, they do attend events but they lack comprehensive strategies for engaging other stakeholders, leading to missed opportunities for collaboration and knowledge sharing.
4. **Insufficient transparency, focus on governance & fighting greenwashing:** There is a need for a better understanding of governance, for greater transparency in the reporting of environmental and social performance, and in fighting greenwashing, to build trust with stakeholders and promote accountability.
5. **Limited adoption of green technologies:** Adopting green technologies is challenging. Legacy systems and their technologies are hard to die and thus making way for the adoption of green technologies remains a challenge.

Recommendations for improving the current business models:

1. **Integrate sustainability into the business core:** The Triple Layered Business Model Canvas exercise was an eye opener for those who did not already have sustainability at the business core. All business models should fully integrate environmental and social considerations across all aspects of operations, including sourcing raw materials, production, distribution, and end-of-life management.
2. **Invest in R&D:** The Greek & Maltese governments, and the individual businesses in both countries have to increase investment in R&D to drive innovation in sustainable agri-food products and the processes/technologies to create them.
3. **Foster stakeholder collaboration:** The Greek & Maltese governments, the business organisations/lobbies and other key stakeholder should have an ongoing ecosystem building (and ecosystem maintaining) project that does not let ecosystems to grow organically. Such non-systematic growth is bound to fail. With the execution of ecosystem building strategies stakeholders work in an environment where they can build partnerships, share knowledge, and promote collective action towards common sustainability goals.
4. **Focus on governance:** Stakeholders, both public and private, need to enable and empower everyone involved to put governance at the centre of every business process

and every business model. This would in turn bring about the much needed transparent reporting mechanisms for environmental and social performance, ensures accountability and builds more trust between the ecosystem stakeholders, both on a local level and internationally.

5. **Incentivise green technology adoption:** The Greek, Maltese and all our other governments need to provide more incentives and support for the adoption of green technologies to accelerate the transition to sustainable practices. Top management in businesses also need to do their part to have internal schemes that incentivise business divisions to adopt green technologies.

## Conclusion

This document outlines the multi-dimensional approach, incorporating a stakeholder map and a Triple-Layered Business Model Canvas augmented with a governance layer, that the EXCEL4MED project undertook to find feasible future business models for its three ecosystems in the Greek and Maltese agri-food value chain.

The living labs and workshops held in Greece and Malta during 2024 enabled the analysis of the current business models and the ability to identify gaps to create a bridge between existing practices and desired outcomes. The evaluation of business, environmental, and social activities within these ecosystems identified both opportunities and deficiencies. By knowing who all the stakeholders are, defining what they provide and obtain from the ecosystem, by scoring their influence and interest and by discussing the twenty-seven boxes of the Triple-Layered Business Model Canvas, we identified critical areas that need focus and resources for the ecosystem to thrive. It provided us with a clearer view of the bottlenecks for innovation diffusion and what needs to be done to bridge the gap between existing practices and desired outcomes. How and why a sustainable business model generates competitive advantage thanks to the combination of greater customer value and the contribution to sustainable development of the organisation, of society at large and of the environment, is now much clearer.

One key point that came out of this exercise is the importance of dealing with greenwashing - of creating something practical, sustainable and yet competitive. The triple-layered business model canvas enables you to ensure you do not just greenwash your products or services by simply labelling them as "sustainable" just because one or a few aspects are sustainable by their nature. It considers all the aspects. Another key point that emerged by carrying out the exercise of filling in the triple-layered business model canvas, is that to create thriving ecosystems, we need to deliver something practical, we need to fill in the real gap that the market has and we need to solve a real need that exists in the market. It is not enough to only have a product made from sustainable practices.

The products of the EXCEL4MED ecosystems need to be competitive and carefully take into consideration the alternatives there are on the market that compete for the same market gap the product of the ecosystem will be filling. As we conclude this document, it is also clear that the path laid out by EXCEL4MED is not just a roadmap for the participating countries but a blueprint that could inspire similar initiatives globally. The integration of green technologies, sustainable practices, and ethical business models offers a way forward for industries seeking to adapt to the challenges of our time while remaining profitable and sustainable.

## References

Afuah, A., & Tucci, C. L. (2001). *Internet business models and strategies: Text and cases* (pp. 29-35). New York: McGraw-Hill.

Ain, H. B. U., Tufail, T., Bashir, S., Ijaz, N., Hussain, M., Ikram, A., ... & Saewan, S. A. (2023). Nutritional importance and industrial uses of pomegranate peel: A critical review. *Food Science & Nutrition*, 11(6), 2589-2598.

Bischof, A., Wubben, E. F., Hagelaar, G., Säumel, I., Reddy, S., & Martinez, L. (2020). *Report on triple bottom line business models*. <https://doi.org/10.5281/zenodo.3678363>

Cantrell, L. J., & Linder, J. (2000). Changing business models: Surveying the landscape. *Accenture Institute for Strategic Change*, 15(1), 142-149.

Choi, H., Cho, M. J., Lee, K., Hong, S. G., & Woo, C. R. (1998). The business model for the sharing economy between SMEs. *Architecture*, 6, 625-634.

Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California management review*, 36(2), 90-100. <https://doi.org/10.2307/41165746>

Gordijn, J., & Akkermans, J. M. (2003). Value-based requirements engineering: exploring innovative e-commerce ideas. *Requirements engineering*, 8, 114-134.

Hamel, G. (2001). Leading the revolution: an interview with Gary Hamel. *Strategy & Leadership*, 29(1), 4-10.

Hurst, A. (2014). *The purpose economy: How your desire for impact, personal growth and community is changing the world*. Elevate Publishing.

Joyce, A., Paquin, R. L., & Pigneur, Y. (2015). The triple layered business model canvas. In *A tool to design more sustainable business models. ARTEM Organizational Creativity International Conference. Nancy, France.*

Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of cleaner production*, 135, 1474-1486.

Kar, Y. (2018). Pyrolysis of waste pomegranate peels for bio-oil production. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 40(23), 2812-2821.

Osterwalder, A., Pigneur, Y., & Tucci, C. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the Association for Information Systems*, 16, 1-28. <https://doi.org/10.17705/1CAIS.01601>

Panță, N. D. (2020). The Triple Layered Business Model Canvas Meets the Beekeeping Sector. General and Particular Considerations from the Romanian Industry. *Studies in Business and Economics*, 15(3), 74-90. doi:10.2478/sbe-2020-0046

Pardalis, G., Mahapatra, K., & Mainali, B. (2020, November). A triple-layered one-stop-shop business model canvas for sustainable house renovations. In *IOP Conference Series: Earth and Environmental Science* (Vol. 588, No. 2, p. 022060). IOP Publishing.

Petrovic, O., Kittl, C., & Teksten, R. D. (2001). Developing business models for ebusiness. Available at SSRN 1658505. <http://dx.doi.org/10.2139/ssrn.1658505>

Stähler, P. (2001). *Geschäftsmodelle in der digitalen Ökonomie. Merkmale, Strategien und Auswirkungen* [Dissertation, University of St.Gallen HSG].

Times of Malta. *Farmers in Malta's south to get 'new water' access through Ta' Barkat upgrade*. [Consulted in 2025-01-09]. <https://timesofmalta.com/article/farmers-malta-south-get-new-water-access-ta-barkat-upgrade.1041965>)

Weill, P., & Vitale, M. R. (2001). *Place to space: Migrating to eBusiness models*. Harvard Business School Press.

Who cares wins : connecting financial markets to a changing world (English). Washington, D.C. : World Bank Group.

<http://documents.worldbank.org/curated/en/280911488968799581/Who-cares-wins-connecting-financial-markets-to-a-changing-world>