DRASTIC

DRiving the itAlian food SysTem
Into a Circular economy model

Zoom Meeting

23 Luglio 2020

Depa - UniNA

Dipartimento di Agraria – Università degli Studi di Napoli Federico II

Organizzazione operativa del progetto

PROJECT SUMMARY

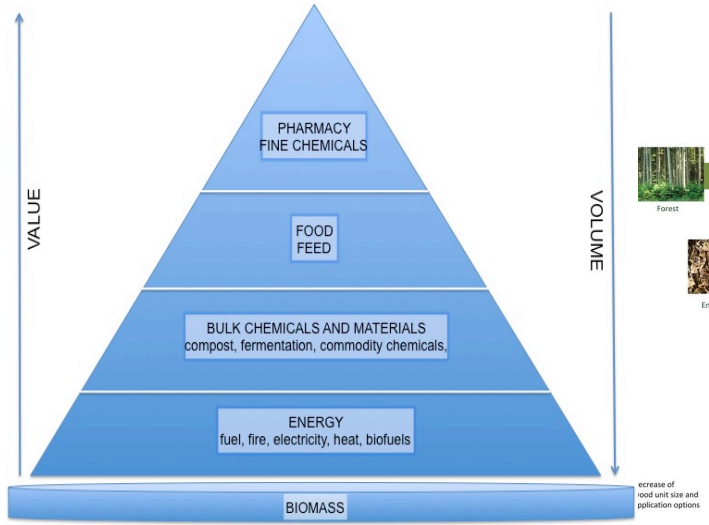
- 3 SUBSYSTEMS IN THE OLIVE OIL INDUSTRY (ALL EDIBLE TYPES) OF CAMPANIA, APULIA, CALABRIA AND SICILY REGIONS:
  - primary production(agro-ecological subsystem) [WP1]
  - commercial food production (agro-industrial subsystem) [WP2]
  - consumption [WP3]

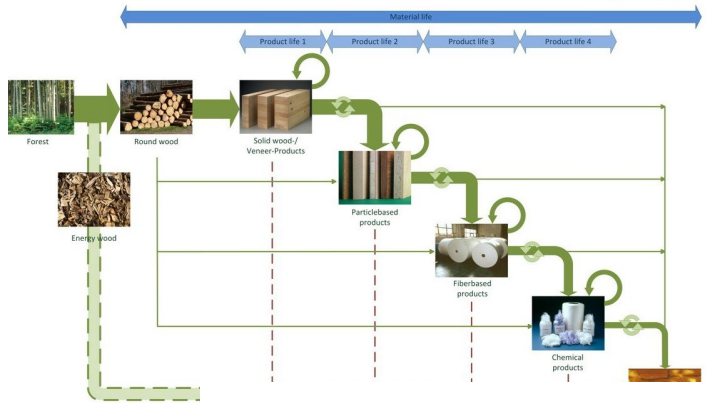
- OBJECTIVES:
  - General

    transform **agri-food wastes into shared resources**, within and between the 3 subsystems, as well as with other industries
  - Specific
    i. study how to foster and manage the transition of agri-food chains into a CE model
    ii. evaluate the impacts of different agri-food transition pathways to CE [WP4]

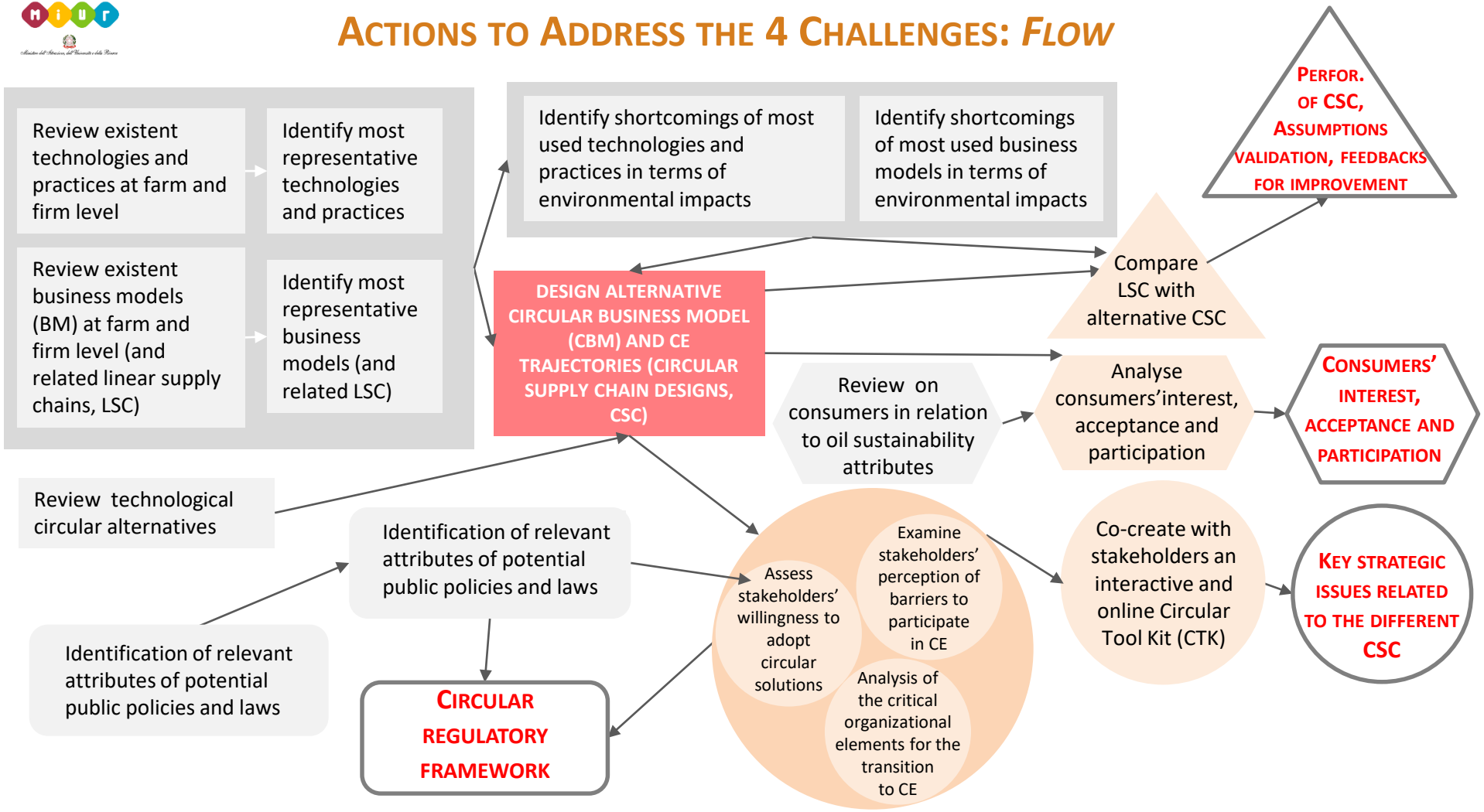
PROJECT SUMMARY

- **STRATEGY (TRANSITION APPROACH)**:
  - Start from the status quo
    - Describe current supply chain:
      1. figures
      2. identify critical challenges (technological, market, coordination, regulatory) (per significantly different types of olive farming/processing/marketing)
      3. identify elements relevant for CBM design (per significantly different types of olive farming/processing/marketing)
  - Design and analysis of alternative CE trajectories (circular supply chain designs)
  - Address critical challenges (technological, market, coordination, regulatory)
  - Comparison between linear and circular counterparts in terms of environmental, economic and social sustainability





ACTIONS TO ADDRESS THE 4 CHALLENGES: *FLOW*



ACTIONS TO ADDRESS THE 4 CHALLENGES: *TECHNOLOGICAL*

Action	Task	How	Who	Where	When	Needs …	Provides …
Review existent technologies and practices at farm and firm level	1.1 – 2.1	Literature review; official statistics; experts		Each unit in its region			List of relevant technologies and practices at farm and firm level
Identify most representative technologies and practices	1.1 – 2.1	Elaboration of official statistics; experts		Each unit in its region		List of relevant technologies and practices at farm and firm level	Most representative technologies and practices
Identify shortcomings of most used technologies and practices in terms of environmental impacts (e.g., waste generated, waste to landfill, recycling rate, GHG emissions, toxicity of materials)	1.1 – 2.1	Literature review; official statistics; experts		Each unit in its region		Literature review; official statistics	Impact categories
Review technological circular alternatives	1.1 – 2.1	Literature review; experts					Circular technologies and practices

ACTIONS TO ADDRESS THE 4 CHALLENGES: *MARKET*

Action	Task	How	Who	Where	When	Needs …	Provides…
Review existent business models (BM) at farm and firm level (and related linear supply chains, LSC)	1.1 – 2.1	Literature review; experts		All regions			List of BM at farm and firm level (and related LSC)
Identify most representative business models (and related LSC)	1.1 – 2.1	Literature review; experts		All regions		List of BM at farm and firm level (and related LSC)	Most representative BM (and related LSC)
Identify shortcomings of most used business models in terms of environmental impacts (e.g., waste generated …)	1.1 – 2.1	Literature review; experts		All regions		Most representative BM	Impact categories
Design alternative circular business model (CBM) and CE trajectories (circular supply chain designs, CSC)	1.2 – 2.2	Causal Loop Diagrams		All regions		Circular technologies and practices	**Alternative CSC**
Review on consumers in relation to sustainability oil attributes	3.1 – 3.2 – 3.3	Literature review					
Analyse consumers'interest, acceptance and participation	3.1 – 3.2 – 3.3	National survey, Framed and Natural Field Experiments		To be defined		Alternative CSC	**Consumers' interest, acceptance and participation**
Compare LSC with alternative CSC	4.1. – 4.2 – 4.3	LCA, LCC, e-LCC, S-LCA → life cycle sustainability assessment (UNEP/SETAC approach); ALMaSS		All regions		Impact categories; LSC and CSC	**Performances of CSC, assumptions validation, feedbacks for improvement**

ACTIONS TO ADDRESS THE 4 CHALLENGES: *COORDINATION*

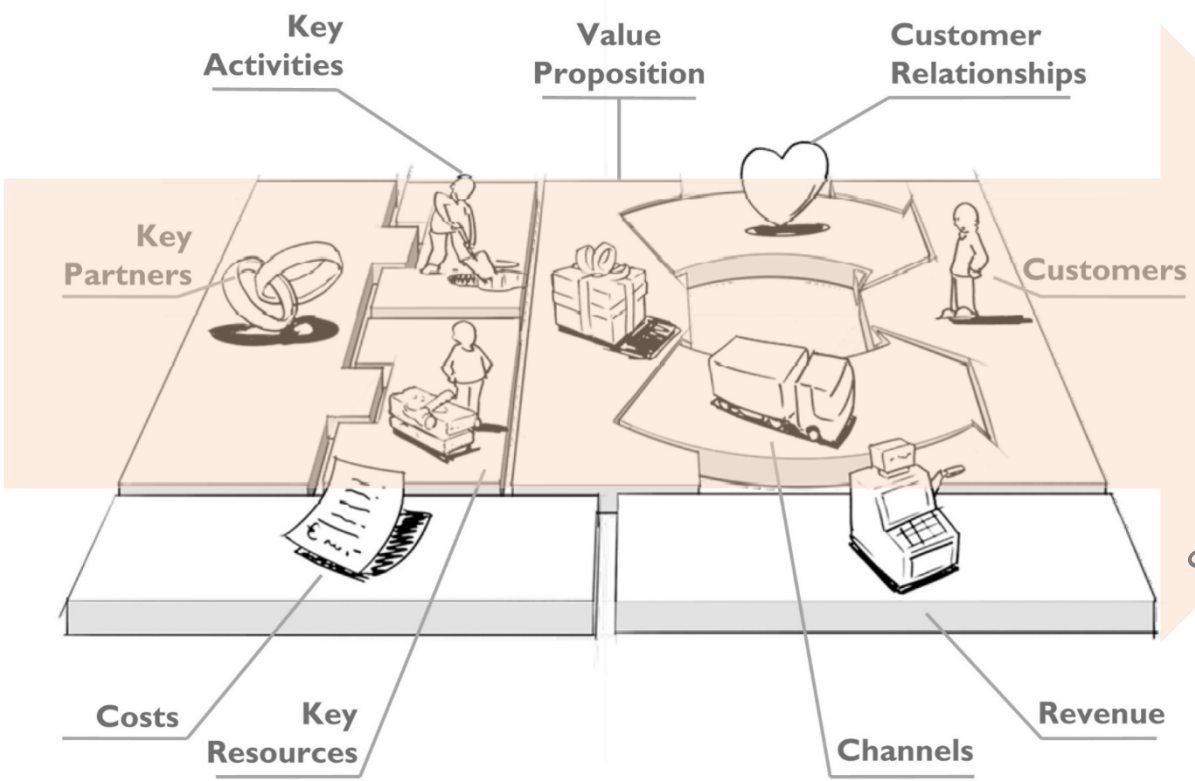
Action	Task	How	Who	Where	When	Needs …	Provides …
Examine stakeholders' perception of barriers to participate in CE	1.3 – 2.3	Semi-quantitative: structured survey + experimental economics games; Best Worst Scaling analysis to rank circular pathways on the base of readiness to be implemented selecting market-driven incentives to enhance implementation.		Each unit in its region		CSC	
Assess stakeholders' willingness to adopt circular solutions	1.3 – 2.3	Stated preferences for technological, organizing, managerial items, under specific market incentives and regulatory frameworks		Each unit in its region		CSC; circular regulatory framework	
Analysis of the critical organizational elements for the transition to CE	1.3 – 2.3	Identifying and analysing organisational drivers of resource efficiency, restoration and resilience in circular systems		Each unit in its region		CSC	
Co-create with stakeholders an interactive and online Circular Tool Kit (CTK)	1.3 – 2.3					Results of former actions of Task 1.3 – 2.3	**Key strategic issues related to the different CSC**

ACTIONS TO ADDRESS THE 4 CHALLENGES: *REGULATORY*

Action	Task	How	Who	Where	When	Needs …	Provides…
Assessment of current regulations	1.4 – 2.4	Desk analysis		All regions			
Identification of relevant attributes of potential public policies and laws	1.4 – 2.4	Delphi method with experts and policy makers; semistructured questionnaires to entrepreneurs		All regions			**Circular regulatory framework**

Business Model Canvas

The architecture of the firm



Source: Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons.

https://www.youtube.com/watch?v=QoAOzMTLP5s

Business Model Case Study 3: Olive kernels

Soldebre in Catalonia, Spain

Introduction

Soldebre is a cooperative that was founded in 1995 by merging three cooperatives active in the agricultural- and food processing sectors of citrus, nuts and olives as well as supplying farmers with fertilisers, crop protection products, fuel and services including credit, insurance and advice. The SME has ca. 1400 members and employs 40 permanent members of staff. In general, the company strives for economies of scale to enable low price value propositions, whilst maintaining product quality. Aiming for growth through consolidating market positions in Catalonia and Europe and expansion into new markets, they are already leading the olive oil market in Catalonia. Owning a mill with multiple processing and packaging lines, 420 tonnes of olives can be processed each day. Harvests vary from 10,000 up to 18,000 tonnes annually, resulting in 1,500-4,000 tonnes of olive oil. About 75% of the harvested weight are wastes and by-products such as leaves, soil, stones and kernels; all of which have recycling and recovery routes in place. The olive kernels are crushed and used within the processing facilities and are also sold to animal farms to generate heat.

Circular business model canvas

Soldebre's business model creates multiple types of value from olive kernels. By using the kernels as biofuel, resource efficiency is increased and carbon benefits are realised, whilst lowering the fuel costs for the olive mill and secure an additional revenue stream from sales of biofuel to animal farms.

Drivers and barriers

The global olive oil market is highly competitive. Additionally, the sector is faced with various environmental challenges. It is important for the long-term resilience of the sector to become more resource efficient and create increasingly circular supply chains, opening new commercially attractive pathways through diversification of business models such as with the creation of value from wastes and by-products as demonstrated here.

Horizon 2020 European Union funding for Research & Innovation

Bio-based Industries Consortium

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Circular business model canvas: Soldebre, Olive kernels

Key partnerships

Growers of olives who are members of the cooperative, with an interest to create as much value from their produce as possible.

Government, providing regulation and incentives in direct collaboration with the olive sector to improve its long-term prospects.

Logistics companies to transport the olive oil.

Activities to create, distribute, sell and recover values

Processing olives into olive oil, package it, and sales to wholesalers, distributors and restaurants.

Processing of wastes and by-products, incl. drying and crushing of kernels used on-site and distributed to animal farms.

Physical, financial, human and/or intellectual assets needed to create, distribute, sell and recover values

Olive mill.

Membership database.

Value added proposition, e.g. economic, technical, social and /or environmental value of product or service

Olive kernels are used at Soldebre's facilities and sold as fuel to generate heat in animal farms. This has a number of benefits for the customer, such as:

Reducing fuel costs with low price alternative.

Environmental benefits through usage of low-carbon fuel.

Types of customer relationships

Customers from animal farms collect the biofuel from the olive mills when they need it. At the mill they get personal assistance to buy the product.

Communication, distribution, sales and other channels used to reach customers

Soldebre sells the biofuel directly through their own channels.

Customers bring their own means of transport to collect the biofuel for use at their animal farm.

Customer segments

Internal usage at Soldebre's food processing facilities.

Animal farms.

Types of costs to create, distribute, sell, and recover value (e.g., financial, social and environmental costs)

The cooperative has a cost-driven business model focused on achieving economies of scale; the business model for using olive kernels for energy supports further cost reductions and increases diversification widening the scope of the model.

Additional costs to offer the olive kernels as biofuel are negligible; fixed and variable costs are associated with the production of olive oil and processing of olive pomace oil.

Types of benefits for *your* business and the mechanisms required to capture them

Cost reduction for Soldebre's processing facilities.

Transaction revenues from sales of olive kernels.

Increased resource efficiency and carbon reductions through use of waste product.

Costs and benefits created and shared in the wider circular supply chain

This is a short supply chain from olive growers, to the cooperative and the animal farms using the olive kernels. The realised supply chain offers the opportunity to avoid other types of costs and problems. With the use of olive kernels as a low-carbon biofuel, environmental impacts are reduced such as achieving a reduction in carbon emissions by using less fossil fuels; Moreover, additional revenues are generated for the cooperatives and their members, creating a more steady income for olive growers which strengthens the local economy. The supply chain could possibly be further extended by using the ashes from combustion of the olive kernels in soil conditioners, to feed new growth cycles of olives or other crops.

Context: Wider costs of- and benefits to the economy, society and/or environment

The olive sector has faced environmental challenges in terms of changing weather patterns, plagues and soil degradation. Increasingly strict environmental regulations are driving change and the sector is supported through government lending support and tax reliefs. Moreover, competition outside Catalonia and Europe has increased. Aside from these pressures, demand for sustainable fuels is growing. Cost reduction and diversification of products support the resilience of this sector and the livelihoods of rural communities.

- **REGULATORY CHALLENGE**
  (study of the organization of the supply chain: within subsystems, between subsystems, with actors of other supply chains)

IDENTIFICATION OF EXISTING ELEMENTS OF CIRCULARITY

- **COORDINATION CHALLENGE**
  (study of the organization of the supply chain: within subsystems, between subsystems, with actors of other supply chains)

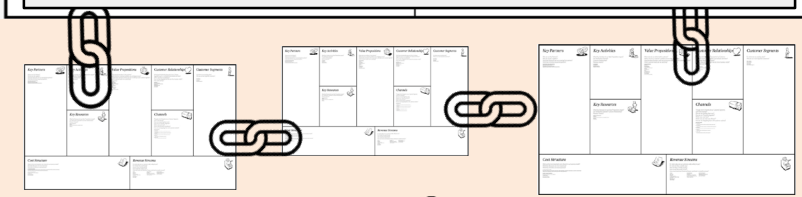
IDENTIFICATION OF EXISTING ELEMENTS OF CIRCULARITY

Agro-Ecological subsystem: FARM

- TECHNOLOGICAL CHALL. (study of technologies)
- MARKET CHALL. (study of business models, consumers' interest in sustainability attributes)

WEAKNESSES IN TERMS OF ENVIRONMENTAL IMPACTS (waste generated, waste to landfill, recycling rate, GHG emissions, toxicity of materials …)

IDENTIFICATION OF EXISTING ELEMENTS OF CIRCULARITY

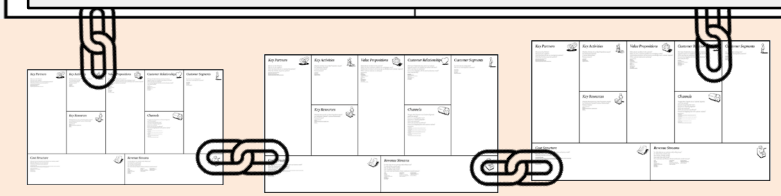


Agro-Industrial subsystem: FIRM

- TECHNOLOGICAL CHALL. (study of technologies)
- MARKET CHALL. (study of business models, consumers' interest in sustainability attributes)

WEAKNESSES IN TERMS OF ENVIRONMENTAL IMPACTS (waste generated, waste to landfill, recycling rate, GHG emissions, toxicity of materials …)

IDENTIFICATION OF EXISTING ELEMENTS OF CIRCULARITY



ACTORS OF OTHER SUPPLY CHAINS

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