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# How to design business models for a circular economy?

Mechthild Donner, Fatiha Fort, Hugo de Vries



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# Context and problem statement

## L'économie malade de ses modèles

LE MONDE CULTURE ET IDEES | 09.04.2015 à 15h20 • Mis à jour le 09.04.2015 à 17h40 |

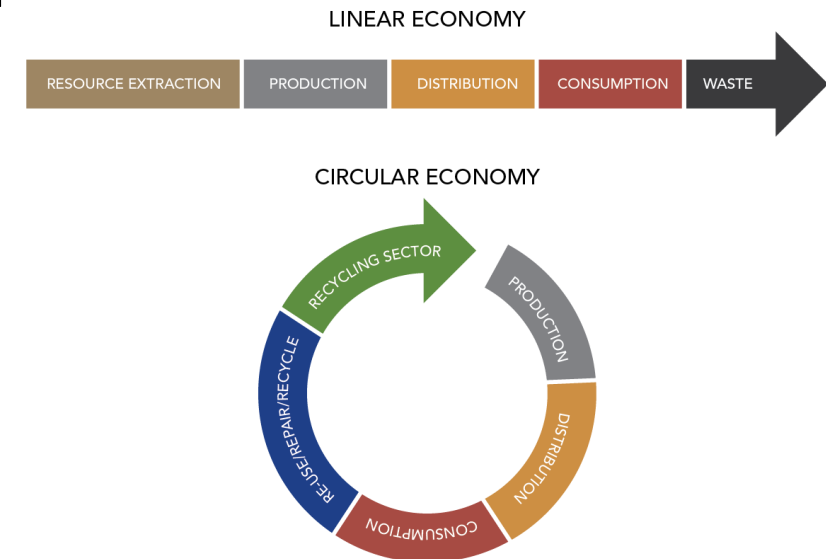
Par **Antoine Reverchon** ([/journaliste/antoine-reverchon/](#))



Source: article from ,Le Monde' 09.04.2015

# What is Circular Economy?

- Circular economy = a new, alternative, more sustainable economic model  
<-> Linear economy = 'take-make-dispose'
- Closed loop idea: reduce waste to a minimum, keep products, components and materials at their highest utility and value at all times by sharing, leasing, reusing, repairing and recycling  
→ waste becomes a new resource
- CE < different schools of thought such as industrial ecology, cradle to cradle, performance economy, regenerative design...
- The term CE < D.W. Pearce and R.K. Turner (Economics of Natural Resources and the Environment, 1989)
- CE has largely emerged from legislation rather than from academics (Murray et al. 2015)



***“A circular economy is an industrial system that is restorative or regenerative by intention and design”***

(Ellen MacArthur Foundation)

# Circular Economy... and the agrifood sector

- Food: the largest fast-moving consumer goods category (EMF 2013)
- The current food production and consumption habits are unsustainable (Jurgilevich et al. 2016)
- Food: a major contributor to current waste streams, but with significant economic potential in being safely reintroduced into the biosphere (EMF 2013)
- Implications: reducing the amount of waste generated in the food system, valorisation of agricultural by-products and food waste, nutrient recycling, and changes in diets toward more diverse and sustainable food patterns (Jurgilevich et al. 2016)

# Circular Economy... and new business models

Business Model: „the rationale of how an organization creates, delivers and captures value” (Osterwalder & Pigneur; 2011)

BM canvas: used to analyse the activities, objectives, methods and resources of a firm that ensure its viability

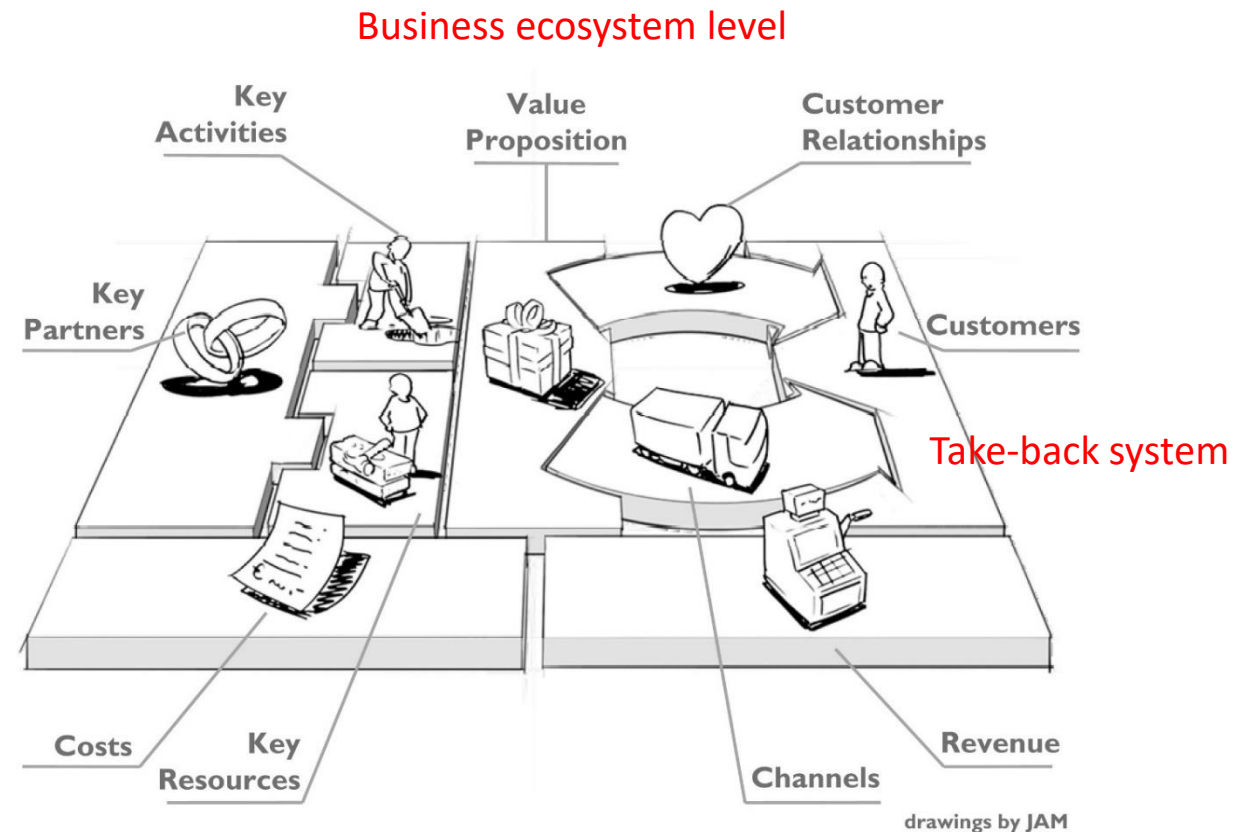
## Circular Business Model:

Lewandowski (2016):

- **Take-back system**: including the idea of material loops where products, components or materials can be reused if collected back from the consumer
- **Adoption factors**: a transition towards circular business models must be supported by various internal organisational capabilities and external (technological, political, sociocultural, economic) factors

Antikainen & Valkokari (2016):

- **Business ecosystem level**: current trends & drivers + stakeholder involvement
- **Sustainability impact**: environmental, social and business



Adoption factors  
Sustainability impact

# Research objective and methodology

- Here, we present the structure of such a novel circular business model from the agri-food sector, the kind of value proposed and the critical success factors

< analytical framework developed in WP5 of the H2020 NoAW project



- Case study of the union of cooperatives Grap'Sud in the South of France, which valorises waste and by-products from the wine industry

# Results: the union of cooperatives Grap'Sud

→ A union of 7 wine cooperatives located in the South of France, with 210 employees on 6 production sites



**Waste valorised / year:**  
125 000 tonnes of grape marcs  
270 000 hl of wine lees  
600 000 hl of wine most

→ A diversity of new value-added products issued from by-products (B2B and B2C):





# Results: The union of cooperatives Grap'Sud

## ORIGINATION

### Key triggers of the initiative at the origin:

- 1969: ensure the existence of the wine cooperative in Cruviers-Lascours
- 1970: law that obliges winemakers to deliver their waste for distillation

### Key objectives of the initiative at the origin:

- Valorization of grape marc for distillation as response to legal obligation

### Key historical milestones between origin and today:

- 1994: diversification towards food industry and nutraceuticals
- 2007: geographical expansion (Alsace)
- 2014: new law that cancels the obligation of waste delivery

## KEY IMPACTS (current)



### Agro Waste valorized

Grape marc, wine lees, wine must, waste from olives and apples, and from dates from Tunisia



### Job created / typology

210 jobs



### Other impacts

Contribution to local economic development, reduction of environmental impact by waste-valorization

## KEY ACTORS & PARTNERS

Category/Expertise	Responsibility in initiative
Grap'Sud in Cruviers-Lascours (Gard) as founder and main site	Initiator and leader with direction, administration, production and R&D, ~100 employees
6 other production sites, several waste collection centers	Production & collection
The cooperatives	Waste delivery
Partnerships with several enterprises and research organizations	Stimulate and contribute to product innovations

# Results: The union of cooperatives Grap'Sud

## ORGANIZATIONAL MODEL

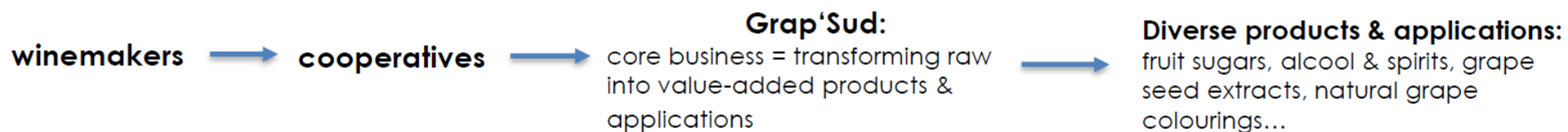
<b>Governance / coordination</b>	Direction at Cruviers-Lascours defines the strategic axes of the group
<b>Shared infrastructure / financing</b>	1 financial holding and 4 subsidiaries
<b>Cooperation with Science &amp; technology</b>	Cooperation with research institutes (INRA, Montpellier SupAgro...)
<b>Support mechanisms</b>	Public financial support

## KEY SIDE-STREAM VALORIZATION (Agro waste)

<b>Waste typology / Yearly volume / Seasonality</b>	125 000 tons of grape marc 270 000 hl wine lees 600 000 hl wine must
<b>Valorization processes / key technologies</b>	Extraction / concentration
<b>Maturity of technologies used / critical size for feasibility</b>	Advanced / innovative technologies
<b>Key outputs and markets</b>	Natural ingredients for Nutraceuticals, Food industry, Animal Nutrition, Oenology, Agro-industries, Alcohol & Spirits

### ILLUSTRATION

Example of cascade of valorization:



### SUCCESS & FAILURE FACTORS



# Conclusions

The structure and persistence of a circular business model depend on internal + external factors:

- adopting innovative technologies for highly value-added products
- sufficient quantity and quality of agro-waste and by-products
- strong cooperation with research partners and suppliers
- flexibility in the production capacity (seasonality and climate conditions)
- continuous product innovation
- targeted marketing needed in order to be profitable and competitive on the markets
- public financial support + legal framework as important external determinants

→ circular business models within the agrifood sector should be designed according to territorial conditions; more European or Mediterranean projects focusing on cases dealing with territorialized circular economy models would be highly interesting

→ translating technology into business while fulfilling environmental and economic goals remains a real challenge for achieving a transition to a circular economy in the agri-food sector

Thank you very much for your attention!

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