e-Mining @ School

Business Models of Circular Economy

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- **Critical raw materials**
- **What is Circular Economy?**
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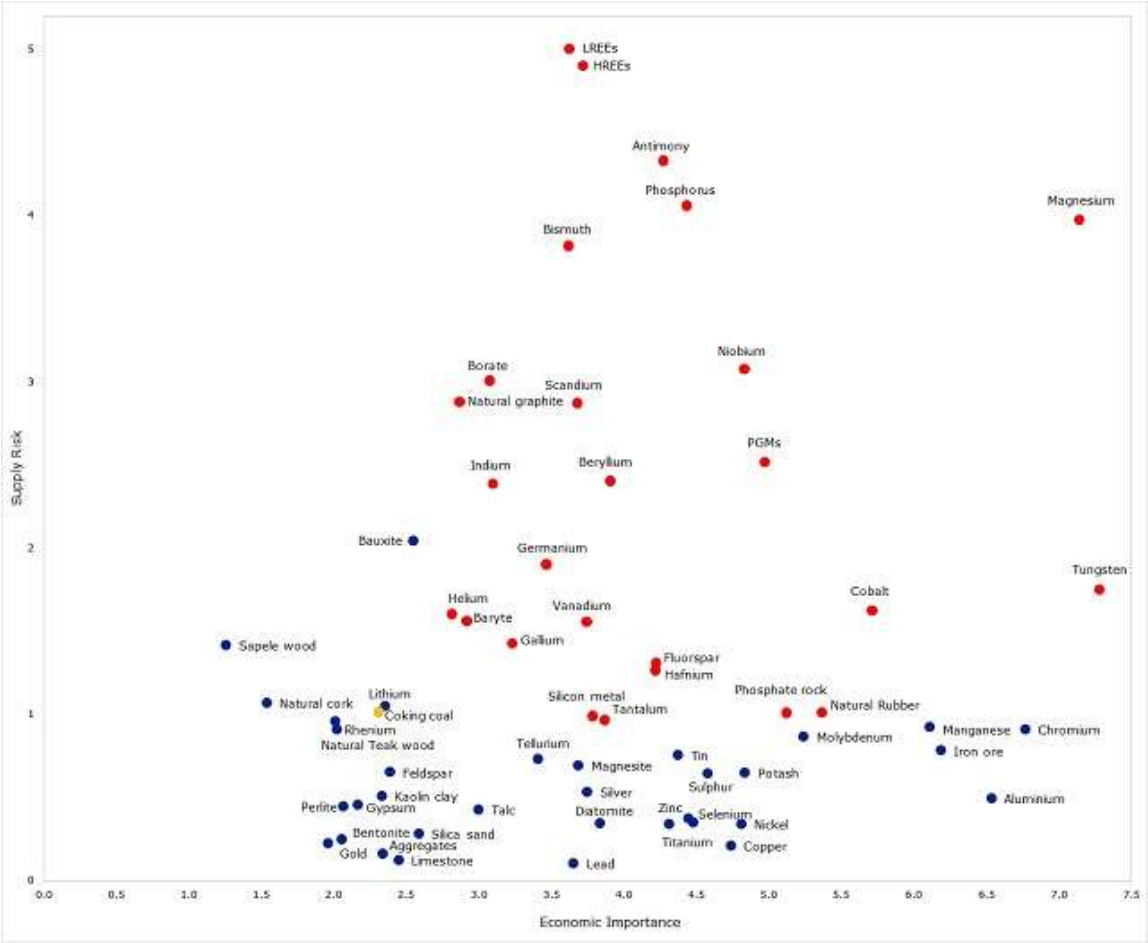
- **Example: Canvas model. Business model planning.**

What is the meaning of *raw materials*?

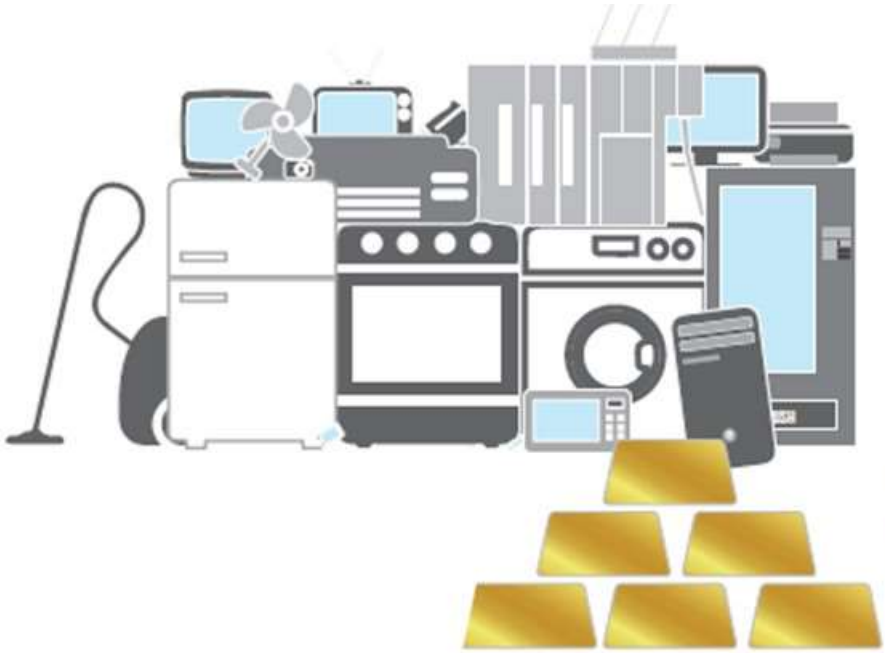
Raw materials are currently essential in the European economy. They are the base of industrial development. Its contribution aims to help producing a wide range of products and applications that are used for everyday life and modern technologies.

Minerals and metals represent the basis of any industrial production process. They become the core of daily use products and also new technological and industrial solutions.

What is the meaning of *raw materials*?



What is the value of WEEE?



Material	kilotons (kt)	Million €
Fe	16,283	3,582
Cu	2,164	9,524
Al	2,472	3,585
Ag	1.6	884
Au	0.5	18,840
Pd	0.2	3,369
Plastics	12,230	15,043

Estimated value of raw materials at

55 BILLION EUROS

Baldé, C.P., Forti V., Gray, V., Kuehr, R., Stegmann,P. : The Global E-waste Monitor – 2017, United Nations University (UNU), International Telecommunication Union (ITU) & International Solid Waste Association (ISWA), Bonn/Geneva/Vienna.

Linear Economy

Circular economy limitations:

- Loss of the materials and products value
- Lack of resources and unpredictable/inconsistent prices
- Waste generation which involves environmental issues

Linear Economy - What doesn't work?

"Every year about 80% of the materials used to produce consumer goods, worth $ 3.2 trillion, are not recovered"
(Nguyen, Stuchtey & Zils 2014)

"Humanity requires more than 50% more than what the planet can generate"
(Global Footprint Network 2012, p.21)

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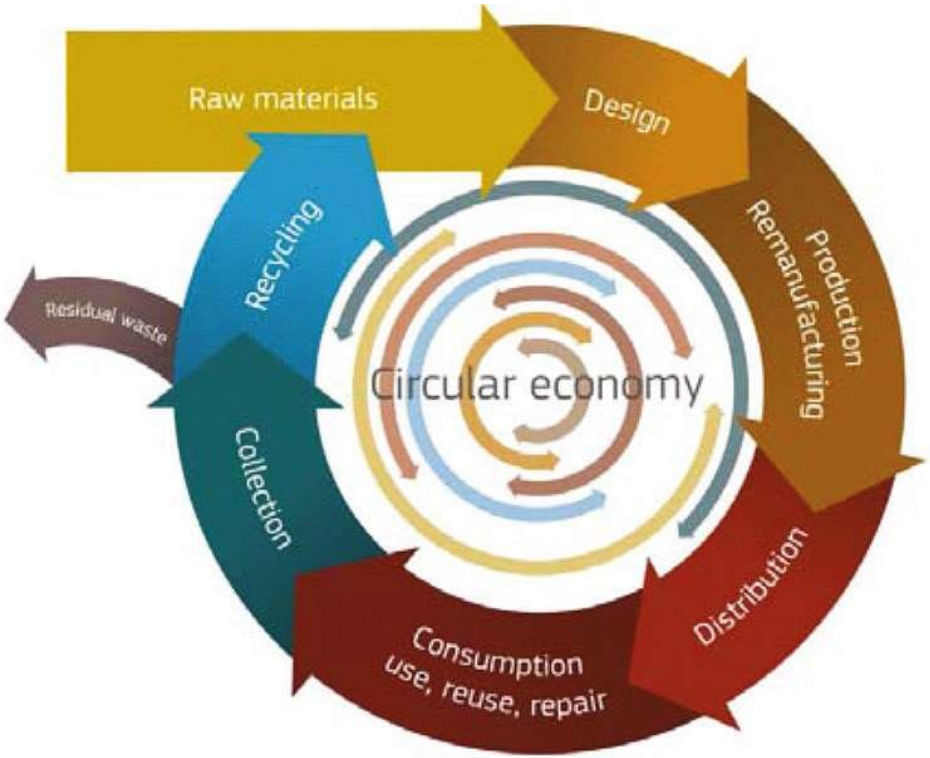
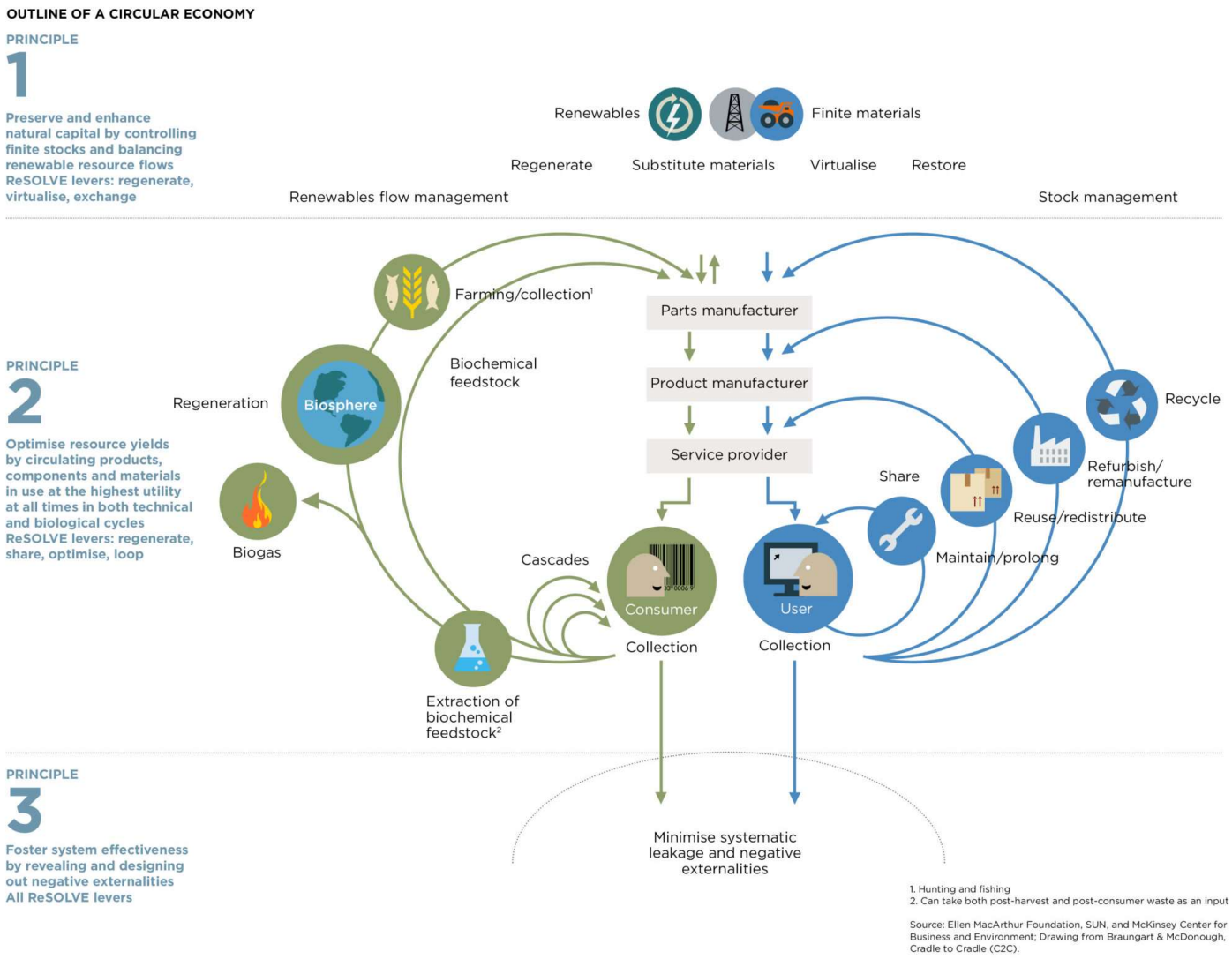
¿What if we turn wastes into new resources?

Circular economy



Source: European commission



Source: https://www.ellenmacarthurfoundation.org/circular-economy/infographic

CIRCULAR ECONOMY: multi-R approach

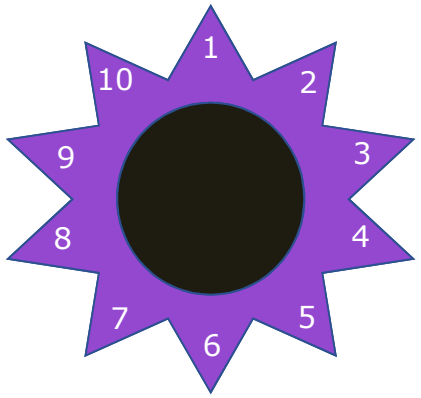
Source: ACR+

Potential benefits for enterprises

1. It is the only way to guarantee a mid or long term competitiveness.

2. Open new market niches or business opportunities. Create new value from waste or coproducts.

3. Technology, products and processes innovation.



4. Create employment and improve job skills.

5. Optimize resources and extend materials life.

Source: http://www.centraldecambio.com/creemos/economia-circular-transicion-y-beneficios/
http://www.futurosostenible.elmundo.es/sostenibilidad/economia-circular-un-cambio-hacia-la-sostenibilidad
http://economiacircular.org/DOCUMENTACION/Publicaciones/Monografias/201703_Por%20qu%C3%A9%20y%20c%C3%B3mo.pdf

Potential benefits for enterprises

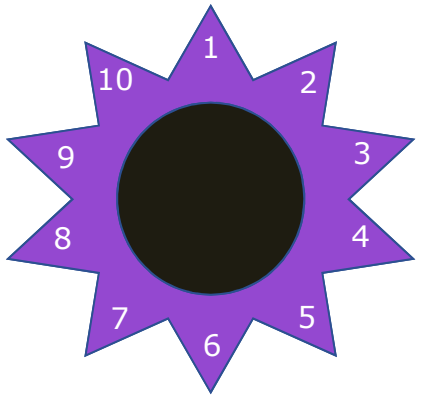
6. Decrease production and wastes associated costs.

7. Promote enterprises collaboration, since one's wastes could become the other's resources.

8. Reduce economic and resources dependence.

9. Reduce wastes and environmental impact.

10. Improve the enterprise image and its clients reliance.



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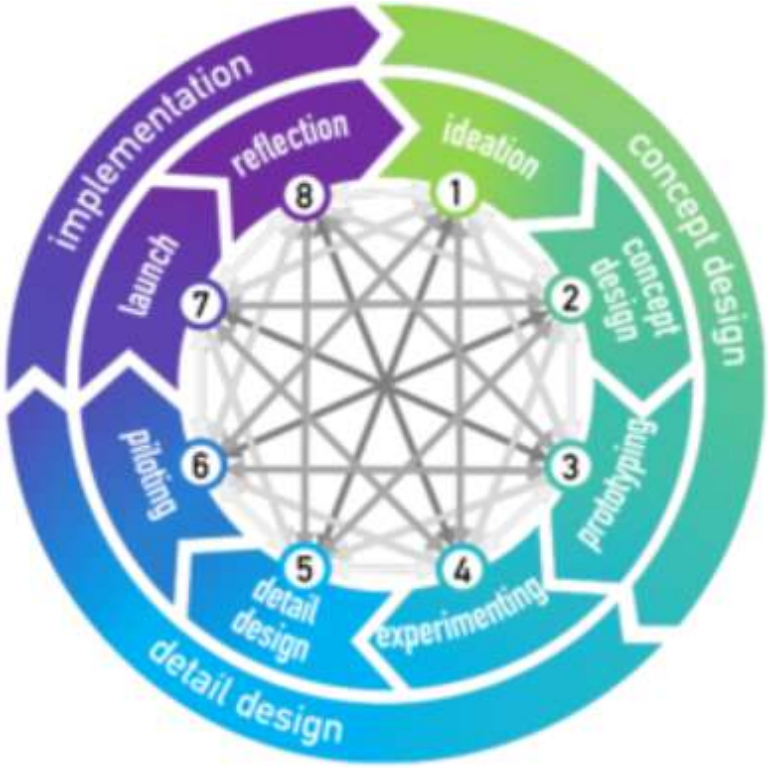
http://economiacircular.org/DOCUMENTACION/Publicaciones/Monografias/201703_Por%20qu%C3%A9%20y%20c%C3%B3mo.pdf

What is a business model?

A business model describes the rationale of how an organization creates, delivers, and captures value in economic, social, cultural or other contexts.

What is a business model?



Concept design	Idealisation
	Concept design
	Virtual prototyping
Detail design	Experimenting
	Detail design
	Piloting
Implementation	Launch
	Adjustment & diversification

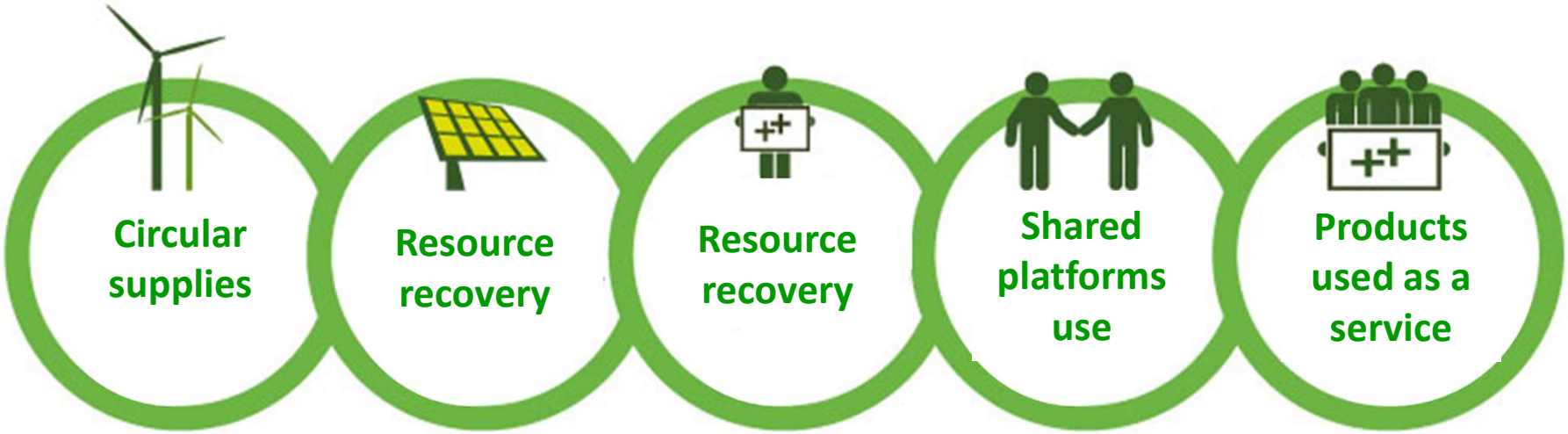
Source: Geissdoerfer, Martin; Savaget, Paulo; Evans, Steve (2017). "The Cambridge Business Model Innovation Process". Procedia Manufacturing. 8: 262–269. doi:10.1016/j.promfg.2017.02.033

What is a business model?

Concept design	Detail design	Implementation
Everything needed to create something	**Everything needed to sell something**	**How and what the customer pays**
Ideation **Concept design** **Virtual prototype**	**Experimenting** **Detail design** **Piloting**	**Launch** **Adjust & diversific.**
• Raw materials • Design • Production • Employees • …	• Marketing • Communication • Distribution • Service delivery • …	• Revenue strategy • Price strategy • Payment method • Payment times • …

Source: Geissdoerfer, Martin; Savaget, Paulo; Evans, Steve (2017). "The Cambridge Business Model Innovation Process". Procedia Manufacturing. 8: 262–269. doi:10.1016/j.promfg.2017.02.033

Business models of circular economy



Circular supplies	Resource recovery	Resource recovery	Shared platforms use	Products used as a service
Supply of renewable, recyclable or biodegradables resources for circular production and consumption systems.	Obtaining of energy and/or useful resources from wastes or products at its end of life.	Increase the useful life of a material by repairing, updating, remanufacturing or re-marketing it.	Share the use, access or ownership of different products so that they have a more intensive use	Products renting or paying for its use, instead of buying them.

Sources: https://www.pre-sustainability.com/news/5-roads-to-a-circular-economy-part-iv-sharing
http://repensadores.es/2015/12/economia-circular-modelos-de-negocio/

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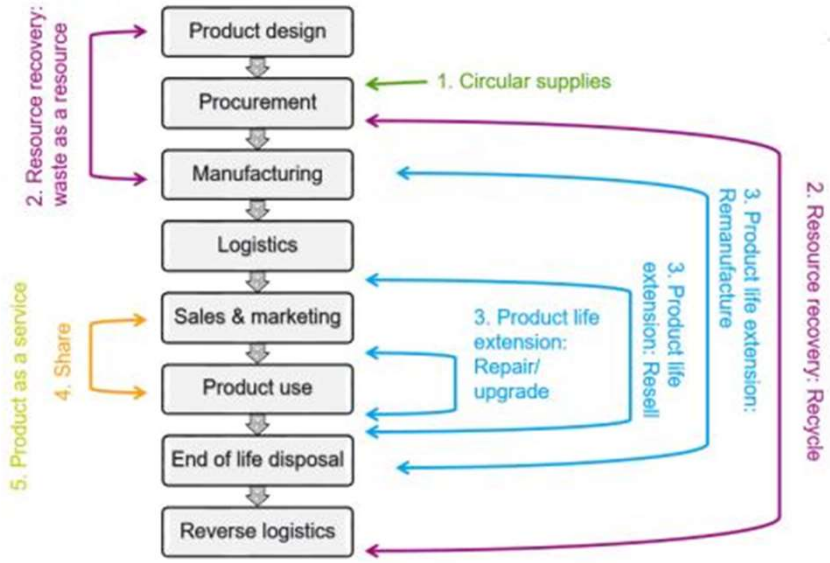
Business models of circular economy

1. **Circular Supplier**
2. **Resources recovery**
3. **Product life extension**
4. **Shared platform**
5. **Product "as a service"**



Business models of circular economy

1. ***Circular Supplier:*** Provide renewable energy, bio based- or fully recyclable input material to replace single-lifecycle inputs.
2. ***Resources recovery:*** Recover useful resources/energy out of dispose products or by-products.
3. ***Product life extension:*** Extend working lifecycle of products and components by repairing, upgrading and reselling.
4. ***Sharing platforms:*** Enable increased utilization rate of products by making possible shared use/access/ownership.
5. ***Product as service:*** Offer product access and retain ownership to internalise benefits of circular resource productivity.

Source: https://www.accenture.com/t20150523T053139__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Strategy_6/Accenture-Circular-Advantage-Innovative-Business-Models-Technologies-Value-Growth.pdf

ReSOLVE model

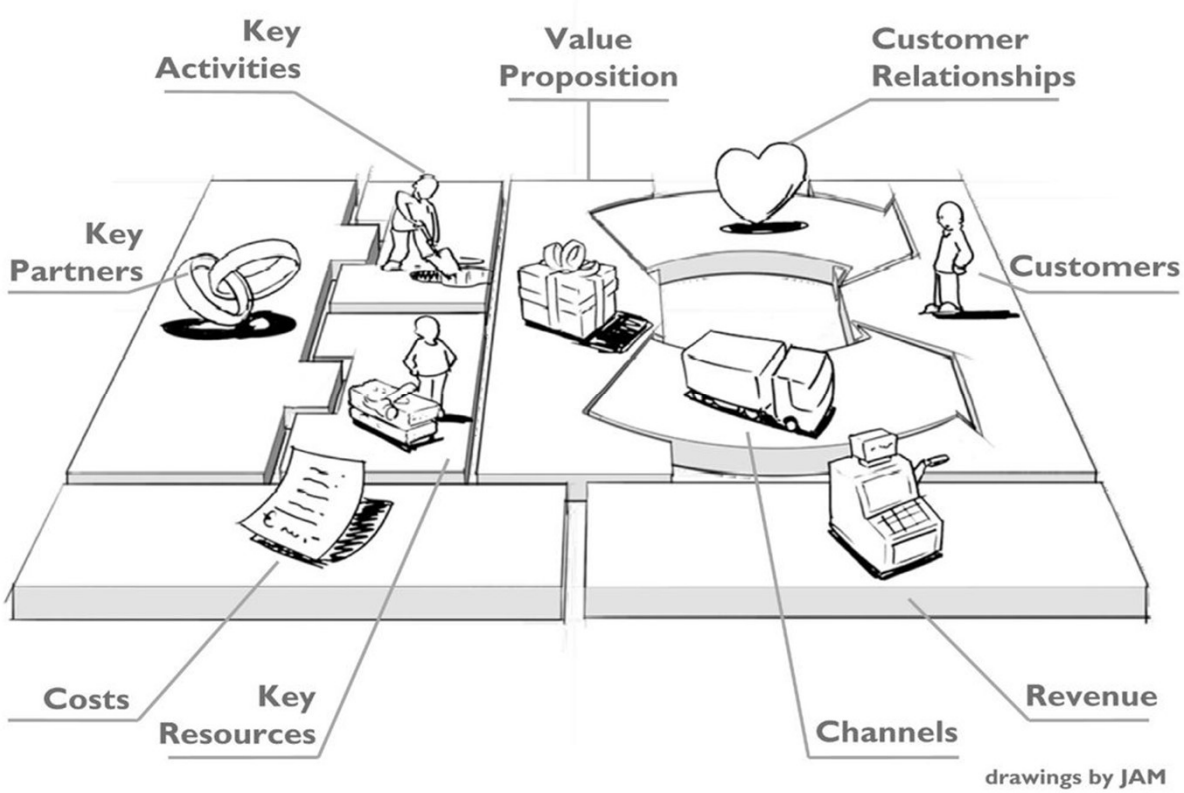
ReSOLVE offers companies and countries a tool to generate circular strategies and growth initiatives.

REGENERATE	• Change to energy and renewable materials • Recover, retain and restore ecosystems health • Return the recovered biological resources to the biosphere
SHARE	• Share assets (eg cars, rooms, appliances) • Reuse / second hand products • Extend life through maintenance, design for durability, updating capacity, etc.
OPTIMISE	• Increase product performance / efficiency • Eliminate waste in production and the supply chain • Use of big data, automation, sensorizing and remote operation
LOOP	• Products or components remanufacturing • Materials recycling • Anaerobically digestion • Biochemical products from organic waste extraction
VIRTUALISE	• Directly dematerialize (eg books, CDs, DVDs) • Indirectly dematerialize (eg online purchase)
EXCHANGE	• Replace old materials for advanced materials • Apply new technologies (eg 3D printing) • Choose new products / services (eg multimodal transport)

Sources: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_PolicymakerToolkit.pdf

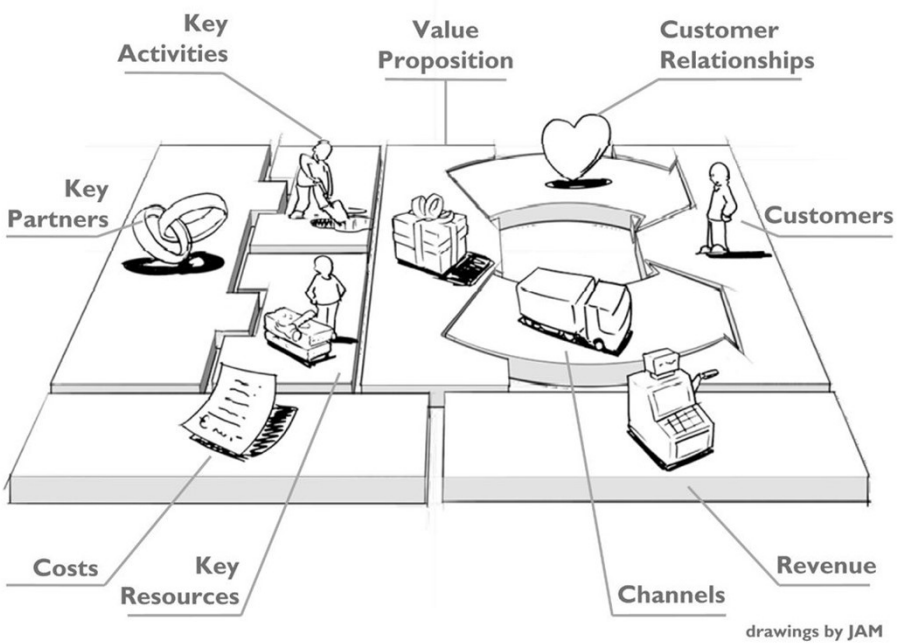
Methodology - analysis

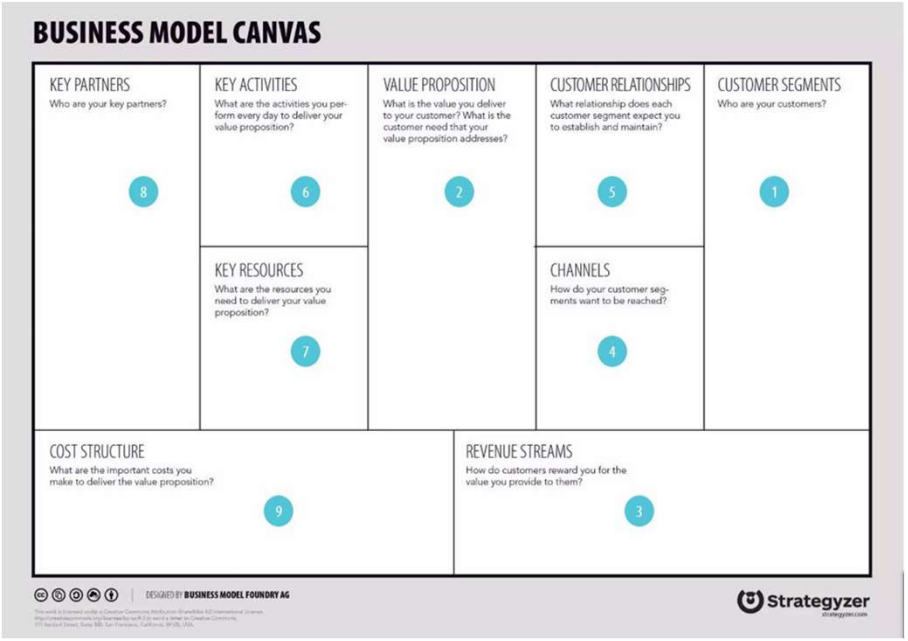
CANVAS model



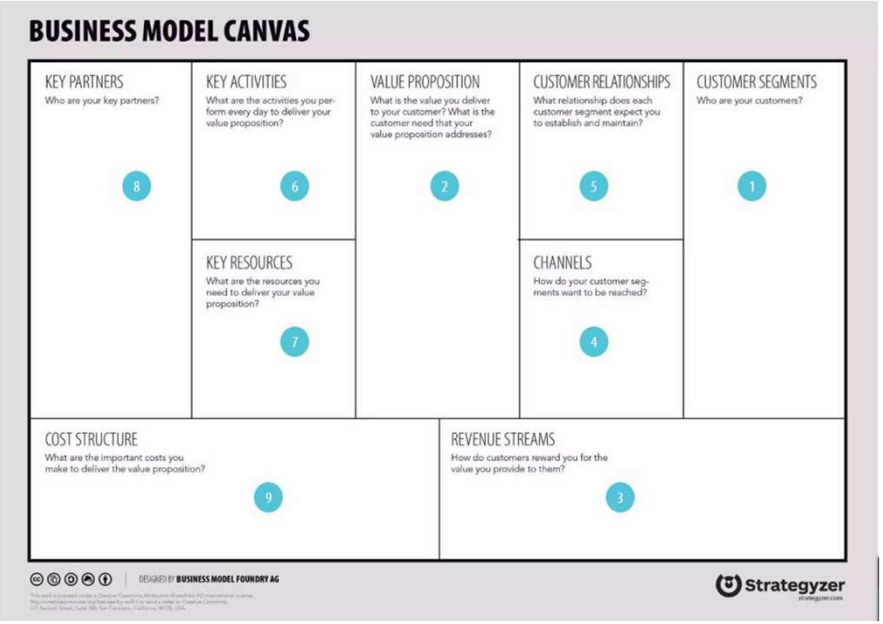
http://trabajardesdecasasi.com/modelo-canvas/

Business Model Canvas





Business Model Canvas



1. **CUSTOMER SEGMENT**

   Identify who are the most important customers and users we address to and for whom we create value.

2. **VALUE PROPOSITION**

   What value do we offer to the customer and to the user; what problem or unmet need, solves our solution.

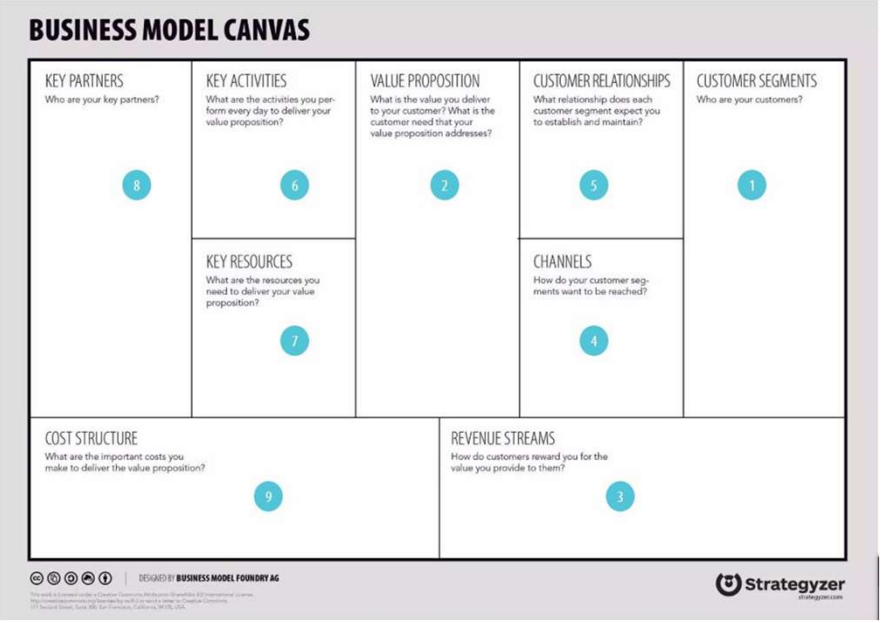
3. **REVENUE STREAMS**

   For what value our customers are willing to pay, how they are willing to pay and how much.

4. **CHANNELS**

   Through which channels we can reach our customers, which ones work best and which ones are the most efficient.

Business Model Canvas



5. **CUSTOMER RELATIONSHIP**

   What kind of relationship our customers expect of entertain with us and which of these is the most efficient.

6. **KEY ACTIVITIES**

   What key activities are needed to get the value proposition that we have set ourselves to propose to the client.

7. **KEY RESOURCES**

   What resources are needed for our value proposition (physical, financial, human resources, etc ...)

8. **KEY PARTNERS**

   What are our key partners, such as resources and activities we need to get from them.

9. **COST STRUCTURE**

   What are the main costs that our model requires of business; which key resources / assets are the most expensive.

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