



**EU-REI**

Creating a Resource  
Efficient India



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# Resource Efficiency and Circular Economy in the Indian Context

## Module 4

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Tools, standards and indicators for RE and CE:  
Circular Business Models





# Course overview



## Basic modules

1	Introductory session
2	Foundations of RE and CE in the international context
3	Towards RE and CE through sectoral strategies in India

## Applied and advanced modules

4	Tools, standards and indicators for RE and CE
4a	Material Flow Analysis
4b	Life Cycle Assessment
4c	RE and CE Standards
4d	RE and CE Indicators
4e	Public Procurement
4f	Circular Business Models
4g	RE and CE Funding

## Recap and evaluation

5	Summary, outlook and evaluation
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## Learning objectives: module 4f

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### **After completion of module 4f, participants will be able to**

- understand the definition of a business model and its components
- outline how the abstract concept of circular economy can be implemented and create value through circular business models
- be able to identify potential intervention points to create a circular business model
- be able to apply the Business Model Canvas to create and redesign business models



# Circular Business Models



## What is a business model?

*„A business model describes the rational of how an organization creates, delivers, and captures value.“*

- Osterwalder, A. & Pigneur, Y. 2010, p.14

**Bottom line:** How does the company make money?

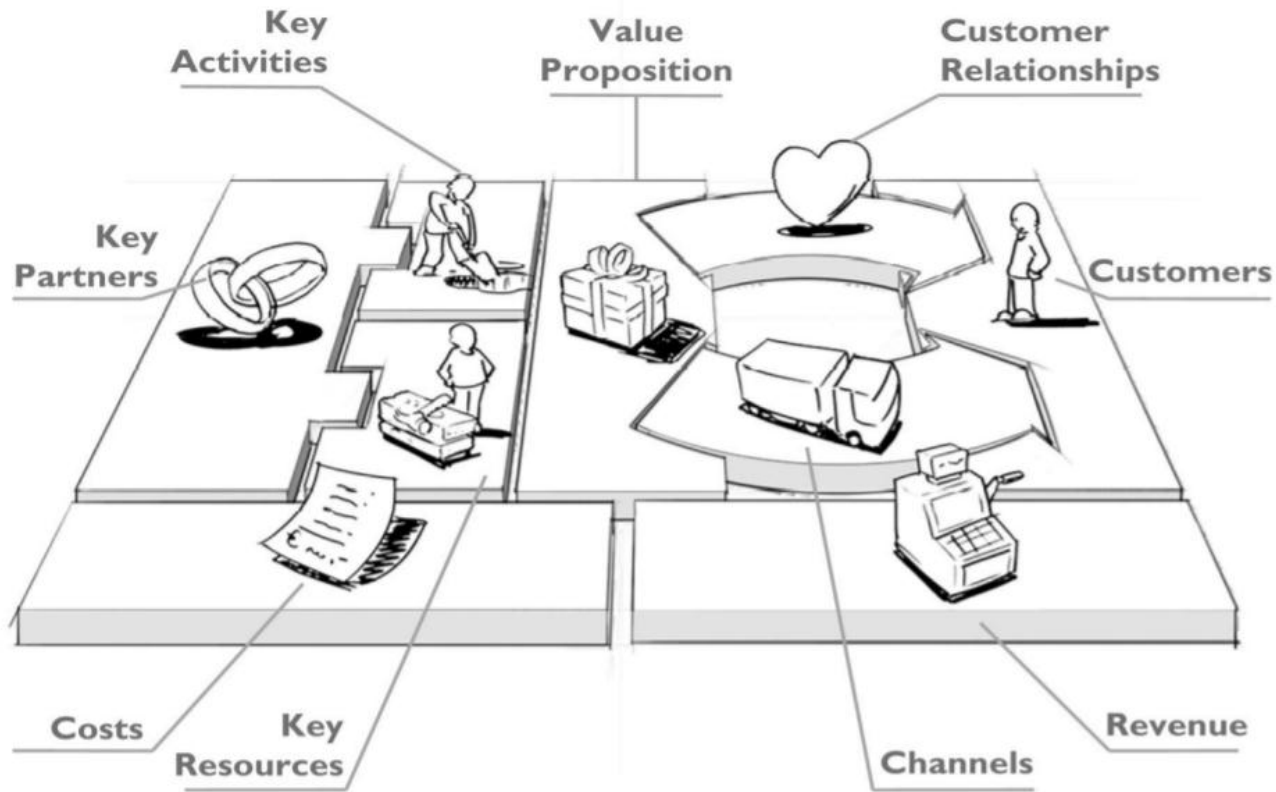




# Circular Business Models



## Basic elements of any business model:

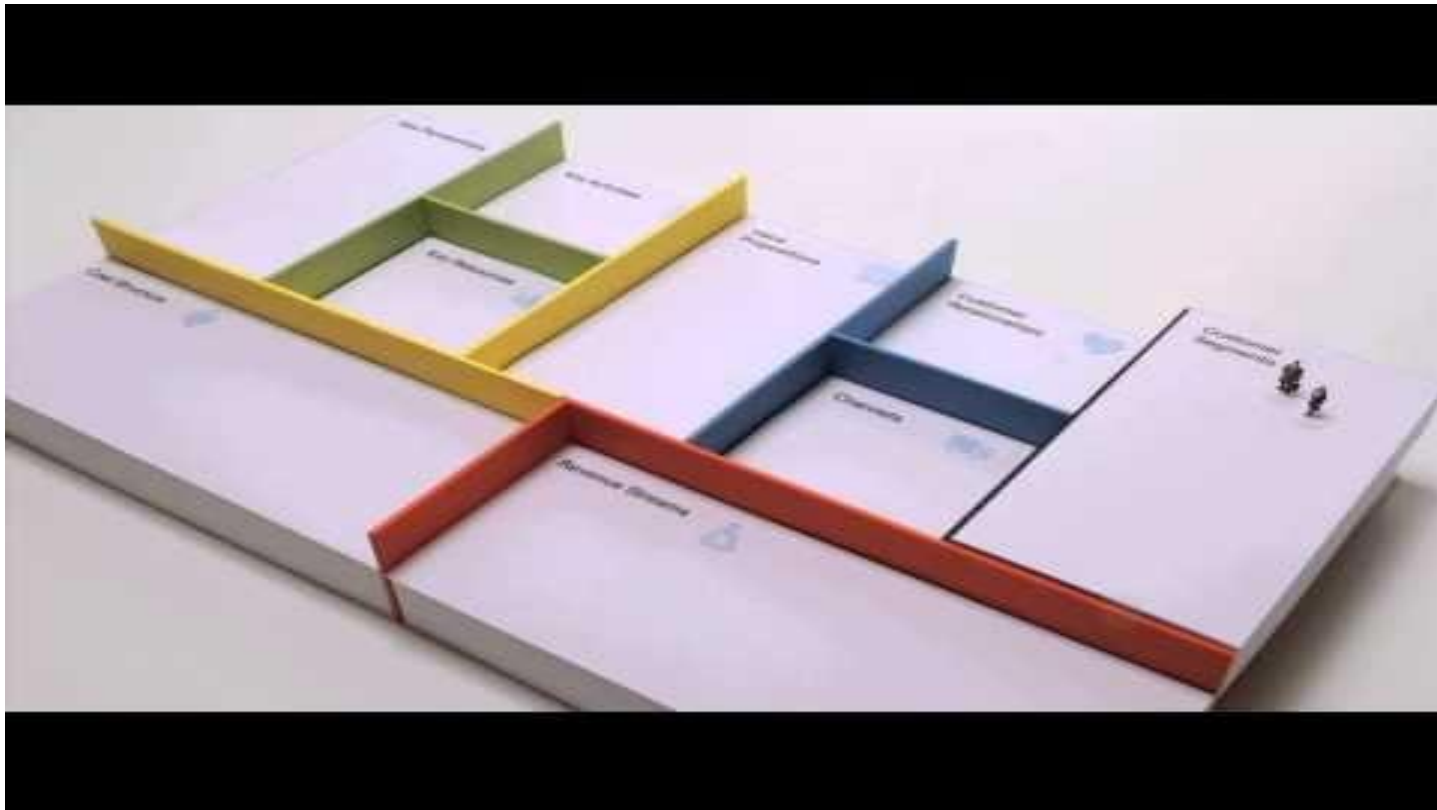




# Circular Business Models



## Business model canvas as a planning tool



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



# Circular Business Models



- Companies in the same industry can have different business models.
- Companies can have different business models for different customer segments, products, regions, etc.
- Example: off-grid solar energy business models

## Sale of solar energy system components

- Company sells individual components of a solar system, e.g. panels, inverters, batteries B2B or directly to end-consumers

## Sale of a customised 'energy solution' based on solar power

- Company delivers energy solution to a customer, e.g. an off-grid eco-tourism lodge
- Customer pays for solution, not single parts

## Leasing of solar system

- Company sells electricity from solar energy to a customer through a Purchase Power Agreement
- Equipment to generate electricity remains in ownership of the company

All companies sell the same product „solar off-grid energy“, but with slightly different value propositions to their customers



# Circular Business Models



## What is a circular business model?

Circular business models aim to **retain value for as long as possible**. To this end, companies need to **adjust the elements** of their business model to implement **circular interventions** (closing, slowing and narrowing loops). This will enable businesses to maintain and capitalize on a product's value and the material beyond a single life.

**Bottom line:** Circular business models usually look for value creation in different places than linearly operating ones.





# Circular Business Models

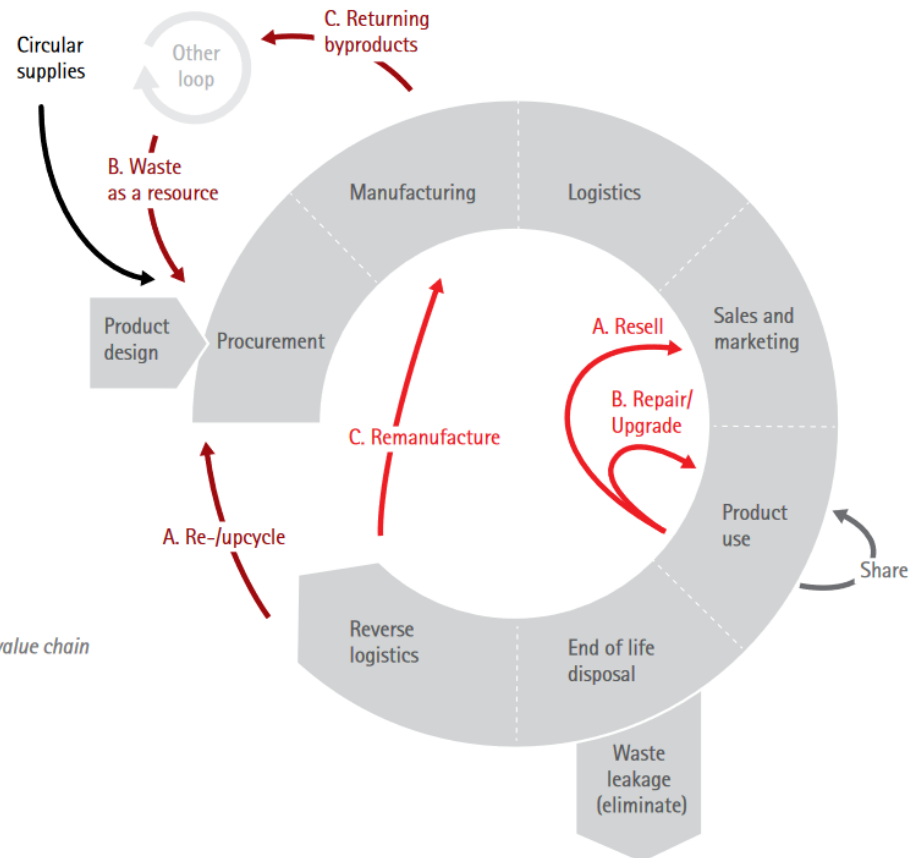


## Circular business models can be established through various interventions in the value chain

### Business Models

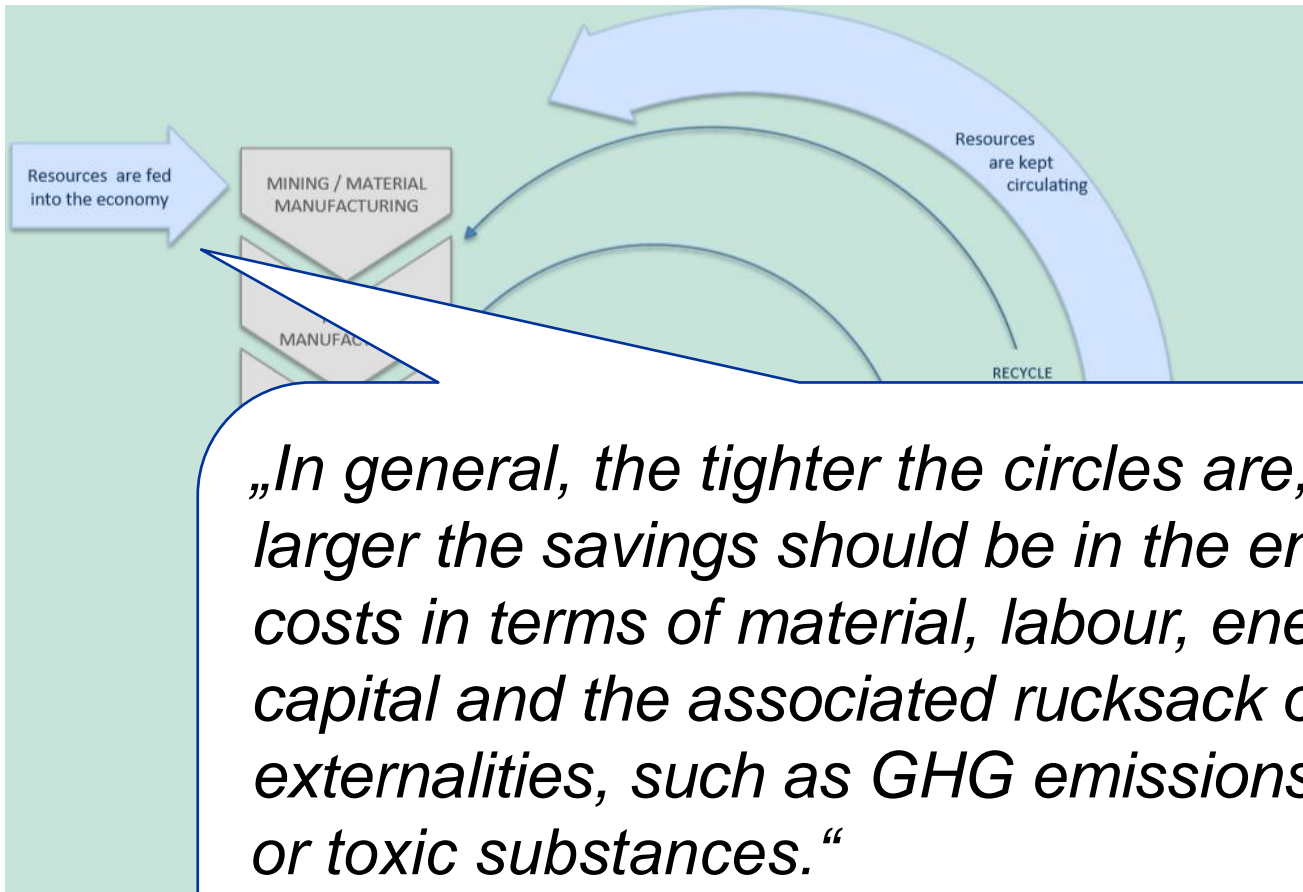
- **Circular Supplies:** Provide renewable energy, bio based- or fully recyclable input material to replace single-lifecycle inputs
- **Resource Recovery:** Recover useful resources/energy out of disposed products or by-products
- **Product Life Extension:** Extend working lifecycle of products and components by repairing, upgrading and reselling
- **Sharing Platforms:** Enable increased utilization rate of products by making possible shared use/access/ownership
- **Product as a Service\*:** Offer product access and retain ownership to internalise benefits of circular resource productivity

\*Can be applied to product flows in any part of the value chain





# Circular Business Models



*„In general, the tighter the circles are, the larger the savings should be in the embedded costs in terms of material, labour, energy, capital and the associated rucksack of externalities, such as GHG emissions, water, or toxic substances.“*

- Ellen MacArthur Foundation, 2013, p.30



# Circular Business Models



4 intervention points and/or ways to increase value creation according to the Ellen MacArthur Foundation

## 1) The power of the Inner Circle:

- keep products alive and operating for as long as possible
- design products in a way that they are easy to maintain and repair, and create business models to support that



# Circular Business Models



## Example: Product life extension

**FAIRPHONE**

### Spare parts

The most sustainable phone is the one you already own.



Fairphone 3 Camera

€49.95



Fairphone 3 Speaker Module

€19.95





# Circular Business Models



## 2) The power of circling longer:

- keeping products in as many consecutive cycles as possible and prolonging the time of each cycle
- offer high product quality, easy repairs & upgrades or service schemes
- use parts as spare parts or building blocks for other products
- set up of return systems for consumable products, such as bottles or cans



# Circular Business Models



## Example: Resource recovery and circling

H&M hit by soaring cotton prices

Andrew Ward in Stockholm MARCH 31 2011

FINANCIAL TIMES

Hennes & Mauritz has defended its decision to protect customers from the soaring cost of raw materials after a 30 per cent drop in first-quarter net profits.





# Circular Business Models



## **3) The power of cascade use:**

Diversify the reuse of products and materials within and between industries

## **4) The power of pure circles:**

Uncontaminated material streams since this is key in to maintaining the quality of the materials for many consecutive cycles

→ Application of the 4 principles does not inhibit the application of other principles as well



# Circular Business Models



## Example: Cascade use

- Royal DSM: Dutch company active in Nutrition, Health and Sustainable Living
- Develops, for instance, cellulosic bio-ethanol, a byproduct of co-fermenting sugars derived from crops



### Starch conversion

Innovative eBOOST™ yeast solution for starch conversion in dry and cream forms provides ethanol producers with consistent, increased ethanol yield while significantly reducing glycerol formation.



### Corn fiber conversion

Yeast and enzyme solutions for corn fiber conversion that maximize hydrolysis with an enhanced liquefaction capability and convert all available sugars including glucose, xylose, and arabinose at a high rate.



### Biomass conversion

Yeast and enzyme solutions for biomass conversion, including its unique and sustainable on-site manufacturing of enzymes.

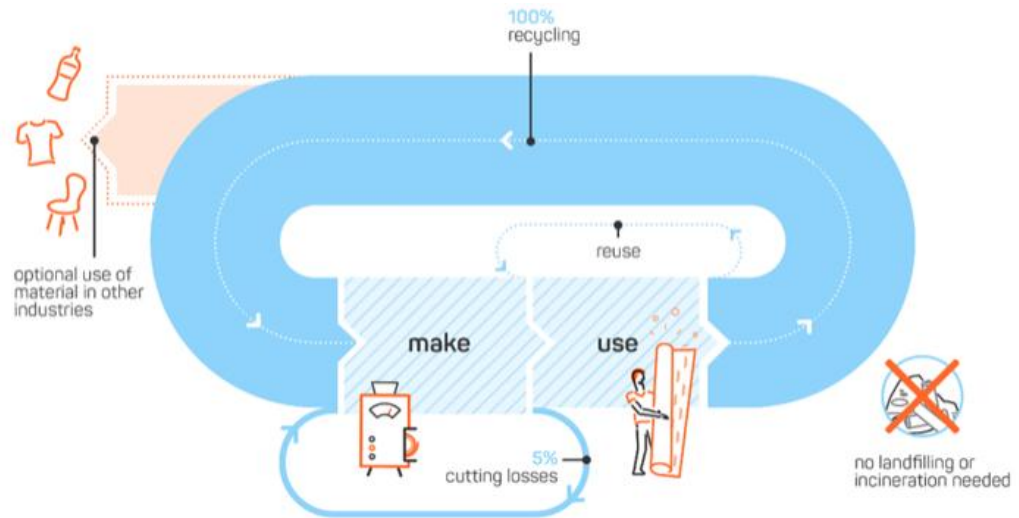


# Circular Business Models



## Example: Pure materials for recycling

- DSM-Niaga developed a carpet material out of single or simple combinations of either pure polyester, a mix of polyester and polyamide, or wool → easy recyclable
- reduced cost, improved indoor air quality, reduced water and energy use, easier transport and handling due to lighter weight





# Circular Business Models



Circular business models can interlink with these 4 „powers“ in different ways:

	Circular supplies	Resource recovery	Product life extension	Sharing platforms	Product as service
Inner circle			✓	✓	✓
Circling longer	✓	✓	✓	✓	✓
Cascaded use		✓			
Pure circles	✓	✓			



# Circular Business Models



## Example: Sharing platform

Startseite Beiträge **Marktplatz** Veranstaltungen

**nebenan.de**

Das Gute liegt bekanntlich nah:  
Der Marktplatz.

Im kleinen Radius suchen und finden.

Quillt dein Dachboden über? Bricht es dir das Herz, wenn dein Fahrrad im Keller verstaubt? Oder das Kinderbett zu klein ist und einer anderen Familie noch dienen könnte? Du suchst verlässliche Nachhilfe für dein Kind oder jemanden, der dir bei schweren Einkäufen hilft? Dann ist der Marktplatz genau deine Rubrik. Hier wird getauscht, verschenkt, verkauft und gesucht. Und übrigens in den meisten Fällen auch gefunden :)



# Circular Business Models



## Example: Product as a service



# Michelin may look at leasing tyres to Indian truck owners

Mamuni Das | Recently in Montreal | Updated on June 12, 2019 | Published on June 12, 2019



Florent Menegaux, CEO, Michelin Group

The rental model would require tyres to be embedded with RFID chips

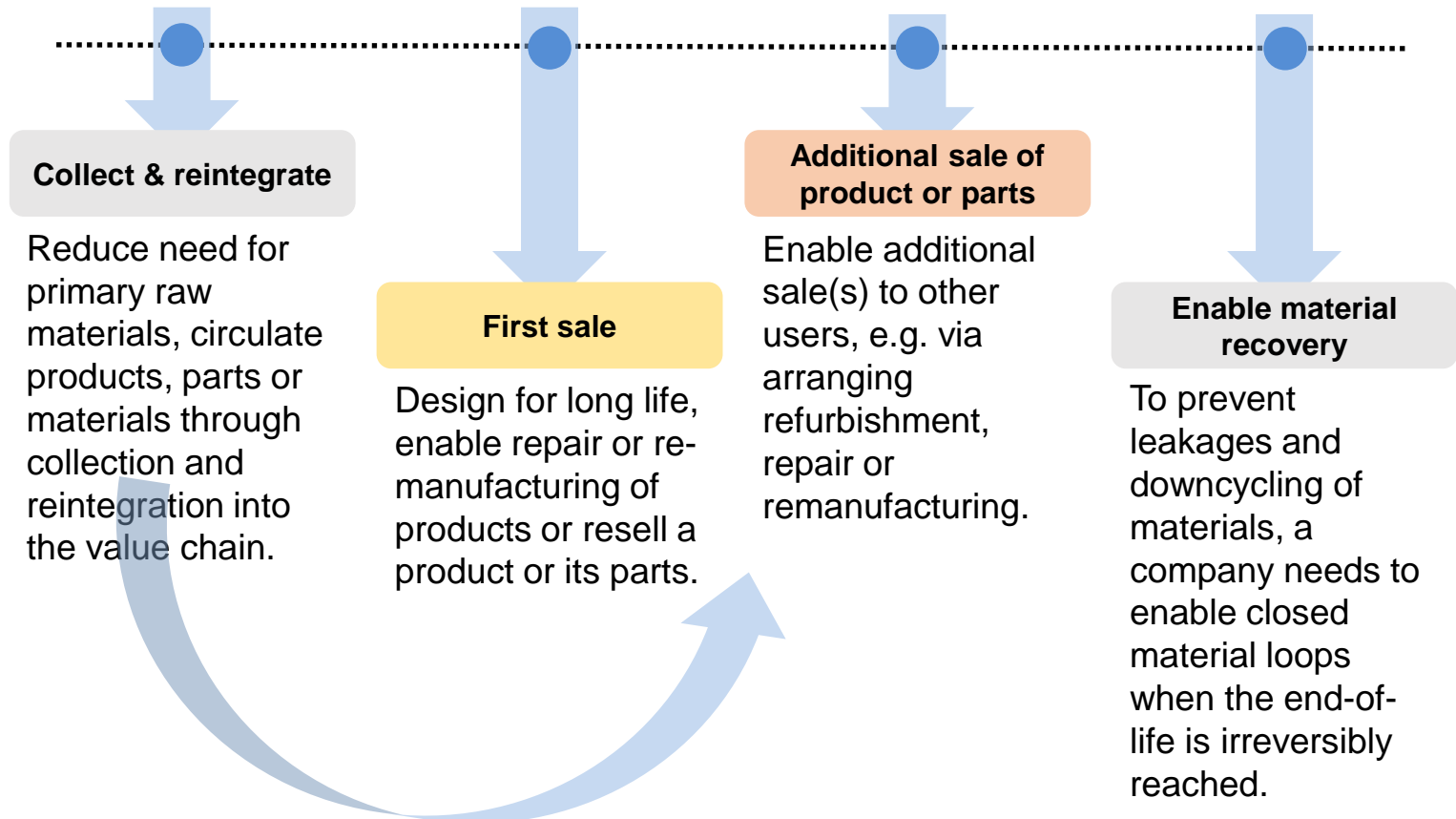
Truck fleet owners may soon start paying tyre companies based on the kilometres run, instead of shelling out the whole price for a tyre upfront.



# Circular Business Models



## Types of interventions in a circular business model







# Circular Business Models



## Three value dimensions of a circular business model

- 1 Value Proposition**  
What value is proposed and to whom?
- 2 Value Creation and Delivery**  
How is value created and delivered?
- 3 Value Capture**  
How is value captured?



# Circular Business Models



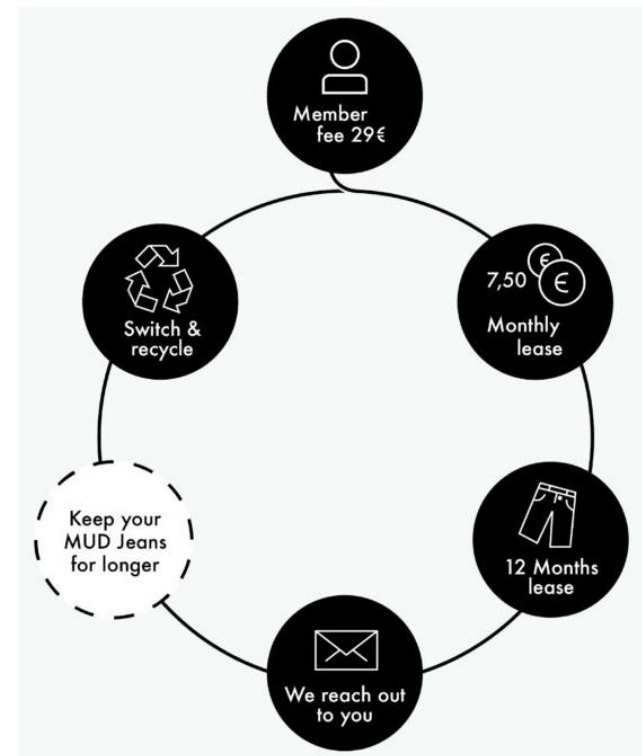
1

## Value proposition – what value is proposed and to whom?

- What is *offered* (product/service)?
- What *value* is proposed?
- To which *customers* does the company cater?
- How does this affect *customer/partner relationships*?



MUD JEANS



Source:

[https://www.researchgate.net/publication/327040437\\_Circular\\_Business\\_Model\\_Planning\\_Tool\\_A\\_tool\\_to\\_help\\_design\\_business\\_models\\_that\\_extend\\_the\\_useful\\_life\\_of\\_products\\_and\\_materials\\_and\\_capitalize\\_on\\_the\\_associated\\_value](https://www.researchgate.net/publication/327040437_Circular_Business_Model_Planning_Tool_A_tool_to_help_design_business_models_that_extend_the_useful_life_of_products_and_materials_and_capitalize_on_the_associated_value)



# Circular Business Models



2

## Value creation and delivery – how is value created and delivered?

- What *activities* does the company carry out?
- What can the company do itself (*internal resources/capabilities*)?
- What can be done by external *partners/channels*?



**KARO**  
S A M B H A V  
Closing material loops



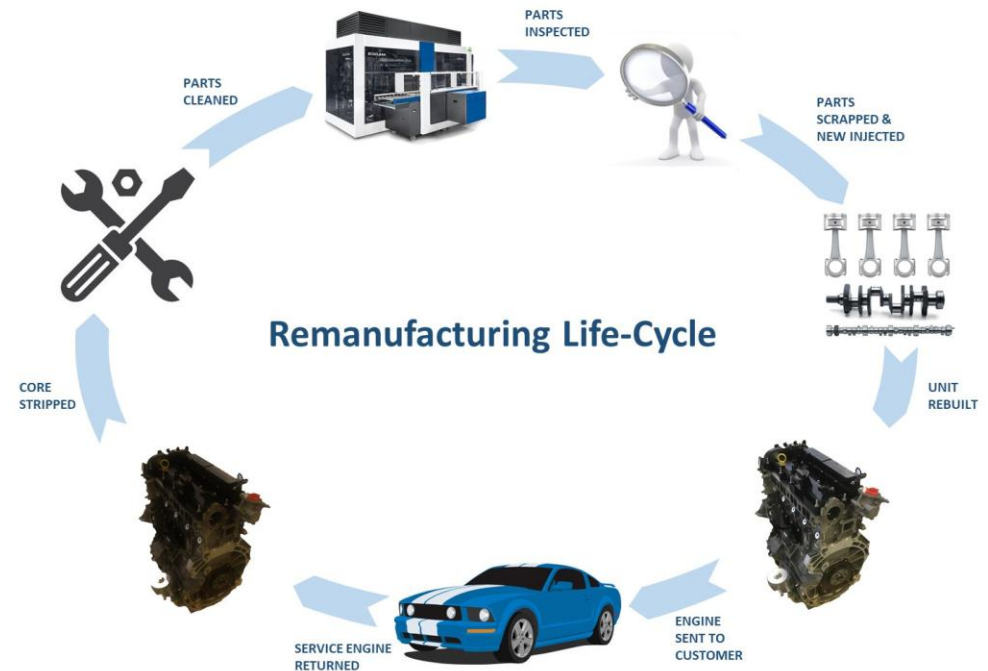
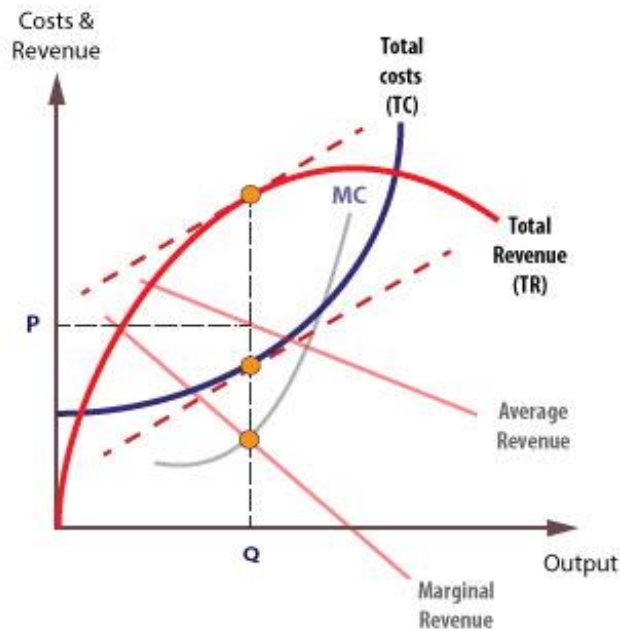
# Circular Business Models



3

## Value capture – how is value captured?

- What is the company's *cost structure*?
- How are *revenues* generated?





# Circular Business Models



## Circular Business Model Canvas

	Collect & reintegrate (reduce primary materials)	First sale (with prolonged use)	Collect & reintegrate (regenerate & reuse)	Additional sale of product or parts	Enable material recovery
<b>Value Proposition</b>					
Offer					
Value Proposition					
Customer segments					
Relationships customer/ partners					
<b>Value Creation &amp; Delivery</b>					
Key activities					
Key resources/ capabilities					
Key partners					
Channels					
<b>Value Capture</b>					
Costs					
Revenue flows					

Interventions

Elements



# Circular Business Models



## Case study: **BHARAT EARTH MOVING EQUIPMENT**





# Circular Business Models



## Case study: **BHARAT EARTH MOVING EQUIPMENT**

- Founded in 1973, markets markets and sells machinery and engines
- 35% of costs lie in overhead, 65% related to material use
- Focus on component recovery and remanufacturing of (e.g.) engine blocks
- Knowledge about state of products during use time is crucial
- Deposit scheme for engine cores to increase collection rates



# Exercise: Circular Business Models



## Exercise 4f.2: Circular business model canvas

- Form groups of 2-3 people
- Analyse the case study of Bharat Earth Moving Equipment Pvt. Ltd.
- Fill in the three marked up cells in the business model canvas
- Put the case study in policy Indian context by discussing the guiding questions.

**Estimated time requirement: 30 min**





# Circular Business Models



## Circular Business Model Canvas **BHARAT EARTH MOVING EQUIPMENT**

Value Proposition	Collect & reintegrate (reduce primary materials)	First sale (with prolonged use)	Collect & reintegrate (organize take-back)	Additional sale of product or parts	Enable material recovery
Offer		Machines and services to develop infrastructure	Return of 'core'	Remanufactured machine	
Value Proposition		Low life-cycle costs, repair, and upgrade services			
Customer segments		Construction industries	Machine owners	After market	
Relationships customer/ partners		Close, e.g. maintenance and performance optimization	Close, e.g. performance optimization	Close	
Value Creation & Delivery					
Key activities		Material acquisition, manufacturing		Quality checks, remanufacturing	
Key resources/ capabilities		Manufacturing technology, design for remanufacturing	Transport	Remanufacturing technology	
Key partners		Suppliers and dealers	Dealers for return	Remanufacturing tech. developers	
Channels		Dealers	Dealers	Dealers	
Value Capture					
Costs		Material costs, fix costs	Deposit, reverse logistics	Remanufacturing (tech. and labour)	
Revenue flows		Sale machines and services	None	Sales of machines and services	



# Circular Business Models



## Circular Business Model Canvas **BHARAT EARTH MOVING EQUIPMENT**

Value Proposition	Collect & reintegrate (reduce primary materials)	First sale (with prolonged use)	Collect & reintegrate (organize take-back)	Additional sale of product or parts	Enable material recovery
Offer		Machines and services to develop infrastructure	Return of 'core'	Remanufactured machine	
Value Proposition		Low life-cycle costs, repair, and upgrade services	<b>deposit in exchange of core</b>	<b>"like new machine" warranty</b>	
Customer segments		Construction industries	Machine owners	After market	
Relationships customer/partners		Close, e.g. maintenance and performance optimization	Close, e.g. performance optimization	Close	
Value Creation & Delivery					
Key activities		Material acquisition, manufacturing	<b>on-site disassembling service</b>	Quality checks, remanufacturing	
Key resources/capabilities		Manufacturing technology, design for remanufacturing	Transport	Remanufacturing technology	
Key partners		Suppliers and dealers	Dealers for return	Remanufacturing tech. developers	
Channels		Dealers	Dealers	Dealers	
Value Capture					
Costs		Material costs, fix costs	Deposit, reverse logistics	Remanufacturing (tech. and labour)	
Revenue flows		Sale machines and services	None	Sales of machines and services	

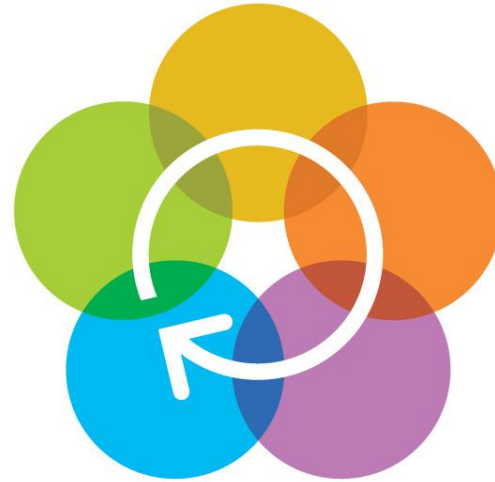


# Summary



## Take-home messages:

- Business models capture how a company creates value
- Depending on the business models, certain components might be more important than others
- There are various intervention points for circular business models, such as making products more durable, circling them longer, cascade their use, making them easier recyclable
- Other circular business models include the concepts of sharing or product-as-service



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