

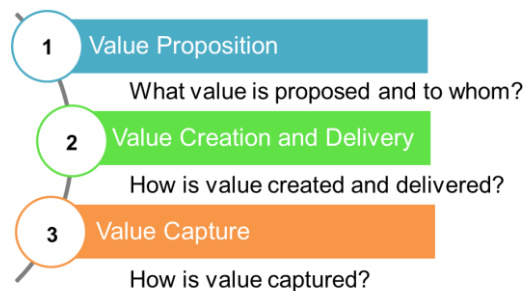


## Task 4f.2: Circular Business Model Canvas

Estimated time requirement: 30 minutes

### Introduction

Circular business models aim to create product systems that keep resources at maximum utility for as long as possible. In a CE, companies need to develop offers and value propositions with the idea of increasing resource efficiency, product life extension and closing material loops in mind. Further, companies need to adjust the elements of their business model to facilitate circular strategies, such as repair, refurbishment, remanufacturing, and recycling. These strategies can be operated in their own business models or enabled through partner networks and extended value chains. The value proposition includes products that are more durable, easy to repair, reuse and remanufacture, as well as services that enable collection of products. This way, companies can maintain and capitalize on the embedded value in products and materials beyond a single life. The three key elements of circular business models address i) the company’s value proposition, ii) the approach to value creation and delivery as well as iii) the modes of capturing value (see figure 1 below).



**Figure 1:** Three key elements of circular business models

### Structure of exercise

Please read the tasks below and use the templates on the next pages in order to capture your results.

Part	Task	Time
1	Form groups of 2-3 people and analyse the case study of Bharat Earth Moving Equipment Pvt. Ltd. with regard to opportunities for adapting a circular business model by using the circular business model canvas template below. Focus on the three marked up cells.	20 min
2	Put the case study in policy Indian context by discussing the following aspects (use template in table 2): <ul style="list-style-type: none"> <li>• Which policies and legislations are relevant for which aspect of the circular business model?</li> <li>• What policies and legislations exist in India today?</li> <li>• What policies and legislations are needed in the future to support circular business models?</li> </ul>	10 min



Caste study: Bharat Earth Moving Equipment Pvt. Ltd.

## **BHARAT EARTH MOVING EQUIPMENT**



Bharat Earth Moving Equipment's remanufacturing activity began in 1973, and has since grown to encompass twelve locations around the world, employing over 3,600 people in a business model with an emphasis on component recovery.

The CE framework places emphasis on the importance of designing effective products and systems rather than aiming solely for efficiency. Bharat Earth Moving Equipment has employed this strategy in their own product design, and rather than aiming to use less and less material, increasing amounts of consideration goes into creating a product that is intended to be remanufactured a number of times. In addition, the company estimates that 35% of their costs lie in overheads, while the majority – 65% – are materials costs. So salvaging materials gives a greater business advantage for the company over their competitors, where goals are often focused on driving down overhead costs.

Bharat Earth Moving Equipment has a number of examples of this in their product portfolio. One of the most well-known involves an engine block with a removable sleeve in the cylinder bore. When the component is recovered, this material can be removed and replaced to return the engine to as-new performance. Previous techniques for remanufacturing engine blocks have involved re-boring the engine cylinder and using a larger piston, but this can only be done up to three times before the quality of the product is affected. Additive manufacturing is also another option in use – cylinder bores can be resprayed with metal to return them to as-new condition.

In order to intercept products before they break, it is crucial to have consistent knowledge of the condition of the key components. Typically, this is monitored through regular and simplified maintenance process between the dealer and the customer, but Bharat Earth Moving Equipment are now beginning to make use of digital technology to add a 'Product Link' service to units in the field. This enables the manufacturer to monitor a number of criteria related to the general status of the item, such as fuel levels and potential risks, allowing closer and more detailed tracking of the customer's assets adding value and lowering owning and operating costs while creating a more effective reverse cycle.

In terms of pricing, Bharat Earth Moving Equipment is able to offer customers significantly lower prices on remanufactured parts when compared to their new products. However, an important part of the pricing structure of remanufactured components is a core deposit, approximately equal to that of the unit itself. Increasing core recovery rates is a challenge for any manufacturer engaging in remanufacturing activity, so offering an economic incentive to return the component keeps the embodied energy and materials within the company's network. This in turn enables it to salvage parts from returned cores, driving down remanufacturing costs. True to the definition of remanufacturing, the



company's remanufactured products are rebuilt and tested to the same standards – and sometimes higher – as new products, and are sold with the same warranty.

Other than increasing recovery rates for cores, which is a continual opportunity for improvement, one of the key obstacles with the practice of remanufacturing is in the customer understanding and perception of the process and term. This issue exists outside of the heavy machinery industry, and can affect sales due to the misconception that remanufacturing results in inferior quality or performance, or the even safety risks. Bharat Earth Moving Equipment's brand reputation and offer of a warranty with the product goes some way to overcoming this issue, but there is still widespread misunderstanding and misuse of the term.



Part 1: Circular business models canvas – the case of Bharat Earth Moving Equipment

# 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	deposit in exchange of core	"like new machine" warranty	
Customer segments		Construction industries	Machine owners	After market	
Relationships customer/ partners		Close, e.g. maintenance and performance optimization	Close, e.g. performance optimization	Close	
<b>Value Creation &amp; Delivery</b>					
Key activities		Material acquisition, manufacturing	on-site disassembling service	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	
<b>Value Capture</b>					
Costs		Material costs, fix costs	Deposit, reverse logistics	Remanufacturing (tech. and labour)	
Revenue flows		Sale machines and services	None	Sales of machines and services	



## Part 2: Policies supporting circular business models

**Table 1:** Policies supporting circular business models

Question	Notes
Which policies and legislations are relevant for which aspect of the circular business model?	Extended Producer Responsibility for End of Life Vehicles promote collection and recycling Tax reductions for repair/remanufacturing services create favourable conditions for prolonging lifetime
What policies and legislations exist in India today?	RE strategy on steel (provisions yet to be transposed into legislations) RE strategy on aluminium (provisions yet to be transposed into legislations)
What policies and legislations are needed in the future to support circular business models?	Tax on raw materials Tax breaks on repair/remanufacturing services