

Circular economy for the Nordic manufacturing industry

Business model development toolkit

The following reflections and exercises help you to identify the most promising circular business idea(s) for your company.

Reflection 1: Inefficiencies

Assess current occurrence of the five inefficiencies for your company:

1) Unsustainable material - Material and energy that cannot be continually regenerated (e.g. direct and indirect material is not renewable or bio-based)

Direct Material: What % of direct material spend is spent on circular material such as renewable, recycled or reused materials?	Comments
<5% <input type="checkbox"/>	
5.1-10% <input type="checkbox"/>	
10.1-20% <input type="checkbox"/>	
20.1-50% <input type="checkbox"/>	
50.2 - 80% <input type="checkbox"/>	
>80% <input type="checkbox"/>	

Indirect Material: What % of indirect material spend (=not clearly allocated to a certain product) is spent on circular material such as renewable, recycled or reused materials?	Comments
<5% <input type="checkbox"/>	
5.1-10% <input type="checkbox"/>	
10.1-20% <input type="checkbox"/>	
20.1-50% <input type="checkbox"/>	
50.2 - 80% <input type="checkbox"/>	
>80% <input type="checkbox"/>	

2) Underutilised capacity - Underutilised or unused products and assets (e.g. products are not operating full hours or full functionality is not useful)

Availability: What % of time is the product not used by the customer/end user? (e.g. if only used in summer, 1h a day)*	Comments
<5% <input type="checkbox"/>	
5.1-10% <input type="checkbox"/>	
10.1-20% <input type="checkbox"/>	
20.1-50% <input type="checkbox"/>	
50.2 - 80% <input type="checkbox"/>	
>80% <input type="checkbox"/>	

* % of 24hours * 365 days per year

Operational fit: to what extent does the product fit the requirements of the customer e.g. regarding operating efficiency, product operations planning	Comments
Full fit through customisation <input type="checkbox"/>	
Full fit of standard solution <input type="checkbox"/>	
Partial fit <input type="checkbox"/>	
Poor fit <input type="checkbox"/>	

3) Premature product lives – Products are not used to fullest possible working life (e.g. due to new models and features or lack of repair and maintenance)

Life time: What is the current average duration of a product life (in years)	Comments
<2 <input type="checkbox"/>	
2-4 <input type="checkbox"/>	
5-10 <input type="checkbox"/>	
11 -20 <input type="checkbox"/>	
>20 <input type="checkbox"/>	

Functionality: % of revenue that comes from products that are designed for a long life e.g. through enhanced reparability, modularity, upgradeability	Comments
<5% <input type="checkbox"/>	
5.1-10% <input type="checkbox"/>	
10.1-20% <input type="checkbox"/>	
20.1-50% <input type="checkbox"/>	
50.2 - 80% <input type="checkbox"/>	
>80% <input type="checkbox"/>	

4) Wasted end-of-life value - Valuable components, materials and energy are not recovered at disposal (e.g. not recycled or recovered at end of life)

Waste in production: % of waste from production that is recycled (based on weight)		Comments
<5%	<input type="checkbox"/>	
5.1-10%	<input type="checkbox"/>	
10.1-20%	<input type="checkbox"/>	
20.1-50%	<input type="checkbox"/>	
50.2 - 80%	<input type="checkbox"/>	
>80%	<input type="checkbox"/>	

Take-back: % of products taken back from customer in dedicated return scheme at end-of-life		Comments
<5%	<input type="checkbox"/>	
5.1-10%	<input type="checkbox"/>	
10.1-20%	<input type="checkbox"/>	
20.1-50%	<input type="checkbox"/>	
50.2 - 80%	<input type="checkbox"/>	
>80%	<input type="checkbox"/>	

Recycling: % of products recycled at end-of-life		Comments
<5%	<input type="checkbox"/>	
5.1-10%	<input type="checkbox"/>	
10.1-20%	<input type="checkbox"/>	
20.1-50%	<input type="checkbox"/>	
50.2 - 80%	<input type="checkbox"/>	
>80%	<input type="checkbox"/>	

5) Unexploited customer engagements - Sales organisation focus on selling functionality of product rather than the customer problem (e.g. missing opportunities to engage customers throughout the product life-cycle to offer additional services and add-on sales)

After-sales: % of revenue from after sales services		Comments
<5%	<input type="checkbox"/>	
5.1-10%	<input type="checkbox"/>	
10.1-20%	<input type="checkbox"/>	
20.1-50%	<input type="checkbox"/>	
50.2 - 80%	<input type="checkbox"/>	
>80%	<input type="checkbox"/>	

	Add-on sales: % of revenue from add-on sales	Comments
<5%	<input type="checkbox"/>	
5.1-10%	<input type="checkbox"/>	
10.1-20%	<input type="checkbox"/>	
20.1-50%	<input type="checkbox"/>	
50.2 - 80%	<input type="checkbox"/>	
>80%	<input type="checkbox"/>	

(c) Mark the **top 2 most relevant inefficiencies** across the value chain for your company and industry (tick two boxes)

Unsustainable Material	
Direct materials	<input type="checkbox"/>
Indirect materials	<input type="checkbox"/>
Underutilised capacity	
Availability	<input type="checkbox"/>
Operational fit	<input type="checkbox"/>
Premature product lives	
Relevance	<input type="checkbox"/>
Functionality	<input type="checkbox"/>
Wasted end-of-life value	
Waste in production	<input type="checkbox"/>
Take-back	<input type="checkbox"/>
Recycling	<input type="checkbox"/>
Unexploited customer engagements	
After-sales	<input type="checkbox"/>
Add-on sales	<input type="checkbox"/>

Reflection 2: Customer pain points

(a) Look at the proposed customer journey and experience, note down potential pain points and select the step of the customer journey that causes most important pain points

(b) Select the **two (2) most relevant pain points** throughout the journey

Steps in the customer journey	(a) Pain points (examples given for inspiration – please add additional pain points as per your experience)	(b) Most relevant step/ pain points
Find & Inform	Insufficient information to choose right product/configuration Product/service benefits unclear / unquantified Lifecycle costs and benefits hard to quantify / non-proven	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Buy	Hard to find exactly right product to need Lack of options for customisation High initial purchase price Lack of financing models	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Use/ Reuse	High effort for maintenance Insufficient know-how for optimised use Unavailability of spare parts / maintenance Repair / upgrade unavailable	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Dispose	Costly disposal Few locations/ services to get rid of product Lack of information on disposal channels	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Reflection 3: Circular economy business models – Sub-models

- (a) Go through the business model sub-models and reflect on the current level of application at your company.
- (b) Think about how your company could address the inefficiencies and pain points you identified as most relevant ones by applying the sub-model and tick the box whether you see potential in it.
- (c) Write a comment on any reflection that comes to your mind

		(a) Current level of application				(b) Potential of business model to address prioritised pain points/ inefficiencies			(c) Comments
		Never heard of model	Model currently in exploration	Model is applied	Model assessed but not relevant	Has high potential	Has some potential	Has no potential	e.g. <ul style="list-style-type: none"> • If already applied: How is it already applied? • If not yet applied: How could it be relevant for your company?
Circular supply chain	Build to last - Design products that are durable and easy to repair (e.g. modular)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Circular supplies – Use recyclable materials in production, e.g. renewable and bio-based materials, chemicals and energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Product Life Extension	Repair & Maintain - Provide repair and maintenance services to extend the life of existing products in the market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Upgrade - Improve product performance by upgrading existing components with newer ones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Resell - Resell products that have reached their useful life to second and third hand markets	<input type="checkbox"/>							
	Remanufacture - Take back and perform industry-like restoration or improvement of original functionality of products and remarket them with lower price	<input type="checkbox"/>							
Sharing platform	Share - Develop solutions that enable increased use of capacity	<input type="checkbox"/>							
	Product as a service - Offer customers to use a product against a subscription fee or usage based charges instead of owning it	<input type="checkbox"/>							
Product as a Service	Performance as a service - Offer customers to buy a pre-defined service and quality level and commit to guaranteeing a specific result	<input type="checkbox"/>							
	Recycle/ upcycle - Collect and recover materials of end-of-life products and reuse them in own production.	<input type="checkbox"/>							
Recovery & Recycling	Return - Return wasted parts and materials to the source (e.g. waste and by-products from own production).	<input type="checkbox"/>							

Exercise 1: Development of business model

Look at the sub-business models that you rated to have potential to address pain points and/ or inefficiencies in the table of Reflection 3 (column is market with a star).

- (a) List up to seven (7) potential business opportunities stating circular sub-model applied, pain points/inefficiencies addressed and a name/ high-level overview of offering
- (b) For top 3 opportunities - provide business model description and concretise what that would mean for your company in terms of offering and customer value proposition
- (c) For top 3 opportunities, make a quick assessment of key value levers on how they can contribute to profit growth through revenue increase or cost reduction, what investments are required etc.
- (d) Tick the box for the idea that you would like to explore further.

#	List company specific circular opportunities			(c) Value levers	(d) selected
	(a) Circular sub-model	(a) Pain point/ inefficiency addressed	(a) Name opportunity (b) Business model description		
1			Name: Description:	Revenue potential <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High Cost impact <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High Investment need <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	<input type="checkbox"/>

2			<p>Name:</p> <p>Description:</p>	<p>Revenue potential</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Cost impact</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Investment need</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p>	<p><input type="checkbox"/></p>
3			<p>Name:</p> <p>Description:</p>	<p>Revenue potential</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Cost impact</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Investment need</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p>	<p><input type="checkbox"/></p>

4			<p>Name:</p> <p>Description:</p>	<p>Revenue potential</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Cost impact</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Investment need</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p>	<p><input type="checkbox"/></p>
5			<p>Name:</p> <p>Description:</p>	<p>Revenue potential</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Cost impact</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Investment need</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p>	<p><input type="checkbox"/></p>

6			<p>Name:</p> <p>Description:</p>	<p>Revenue potential</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Cost impact</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Investment need</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p>	<p><input type="checkbox"/></p>
7			<p>Name:</p> <p>Description:</p>	<p>Revenue potential</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Cost impact</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p> <p>Investment need</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Low Medium High</p>	<p><input type="checkbox"/></p>

Optional exercise: Round Robin

Work together in groups of three (3).

- (a) Each group member describes his or her Top 1 business idea in the first box and then passes the sheet on to the next person sitting on the right.
- (b) The second person reads the description and notes down challenges or risks connected with it and passes the sheet on to person three.
- (c) The third person develops a suggestion on how to improve the idea to overcome the challenges.

At the end of this exercise, three ideas will have been reviewed and improved in your group.

(a) Description	(b) Potential challenges/ Risks	(c) Improvement suggestions

After the joint Round Robin exercise, please summarise the (a) final idea including (b) challenges and (c) mitigation strategies.

(a) Final idea	
(b) Challenges / Risks	(c) Mitigation

