Jump-starting the Circular Economy

Summary of presentations

Rotterdam, 18\textsuperscript{th} February 2016
Eric Mieras, PRé Consultants
Jan van der Kaaij, Between-us
Developing Circular Economy Business Models

*Jump-starting the Circular Economy*
Jan van der Kaaij, Between-us
Only 26% of CEO’s trust they have a clear business case for sustainability
Circular economy thinking could (partially) fix that
But that doesn’t come without its’ challenges

Some of the challenges:
• Building sufficient value chain partnering capabilities
• Creating a corporate culture of “rethinking”
• Identifying the right circular focus areas
• How to drive the theoretical value out
• ...

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Existing tools: using old maps to find new land?

- **Substitute**: How can I substitute the place, time, materials or people?
- **Combine**: Where can I build synergy?
- **Adapt**: What part of the product could I change?
- **Modify**: What will happen if I modify the process in some way?
- **Put to another use**: What other market could I use this product in?
- **Eliminate**: What would happen if I removed a component or part of it?
- **Reverse**: What if I reverse the order it is done or the way it is used?
Customer focus is hard as “Circular” flips the regular business design process.
RESOLVE-framework illustrates broadness of cases

<table>
<thead>
<tr>
<th>REGENERATE</th>
<th>SHARE</th>
<th>OPTIMISE</th>
<th>LOOP</th>
<th>VIRTUALISE</th>
<th>EXCHANGE</th>
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</thead>
<tbody>
<tr>
<td>Regenerate and restore natural capital</td>
<td>Keep product loop speed low and maximise product utilisation</td>
<td>Optimise system performance</td>
<td>Keep components and materials in closed loops and prioritise inner loops</td>
<td>Deliver utility virtually</td>
<td>Select resource input wisely</td>
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</table>

- **REGENERATE**
  - Power by renewable energy
    - IBERDROLA
    - First Solar

- **SHARE**
  - Share
    - Car-sharing: autolib, DAIMLER, drivy, BlaBlaCar, Lyyft
    - Ride-sharing
    - Reuse
    - New/Now Car

- **OPTIMISE**
  - Increase performance/efficiency
    - riversimple
  - Value chain
    - Toyota
  - Consumer
    - The Vauban Quarter

- **LOOP**
  - Remanufacture: Michelín, RENAULT

- **VIRTUALISE**
  - Autonomous cars and direct virtualisation of materials
    - Google, Mercedes Benz, BMW i, riversimple

- **EXCHANGE**
  - Substitute resources directly
    - Better-performing materials

Identifying circular opportunities requires inside out as well as outside in.

Outside in
2. Identify company materiality issues and assess relevance to stakeholders

Opportunities
3. Map in a matrix to identify opportunities for innovation

Inside out
1. Use LCA to identify hotspots
Our process for looking at sustainable innovation

- Value creation from revolution
- Value creation from evolution
- Set ambitions and targets
- Find the relevant touch-points
- Determine the materiality matrix
- Analyze the stakeholders
- The existing Business Model
5 directions for circular business model design

• **Circular Supplies:** supply fully renewable recyclable, or biodegradable resource inputs that support circular production and consumption systems.

• **Resource Recovery:** eliminate material leakage and maximize economic value of product return flows.

• **Product Life Extension:** extend the current lifecycle of a product by means of repairing, upgrading, and reselling.

• **Sharing Platforms:** stimulating collaboration among product users.

• **Product as a Service:** products are used by one or many customers by means of a lease or pay-for-use arrangement.
### What objectives: choosing open methods to innovate

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Culture</th>
<th>New Markets</th>
<th>Platform</th>
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<td>Mergers &amp; Acquisitions</td>
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**Legend:**
- ![Yellow](#): Least recommended
- ![Green](#): Recommended
- ![Dark Green](#): Most recommended

Source: INSEAD Business School, Adapted, February 2016
Thank you for your attention

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Combining the strengths of the Circular Economy with Life Cycle Assessment (LCA)

How to (help) make Circular Economy happen

Eric Mieras, PRé Consultants
Circularity has been discussed for decades ...
What can happen if your perspective is too narrow?
Recycling e-waste in the Netherlands

- **Positive** impact closing loops
- Avoidance of about 500,000 Tons CO2 eq. and 100,000 Tons material per year
- Insight in processes allowing improvements in efficiency
Car Tires Recycling (recycled content in new tires)

- Closing loops doesn’t bring a positive impact
- Negative impact in rolling resistance, therefore fuel use
- Positive impact for energy recovery and other uses for the material recovered
How can we accelerate Circular Economy innovations?
Combining strengths of Circular Economy and LCA

Inspiriting Vision
Minimize environmental and social impacts
Mobilize People

Accountancy Approach
Show impacts from Life Cycle Perspective
Robust Science Based Method
How do we do that?
How to identify opportunities for your product?

Outside in
2. Identify company materiality issues and assess relevance to stakeholders

Inside out
1. Use LCA to identify hotspots

Opportunities
3. Map in a matrix to identify opportunities for innovation

INNOVATION OPPORTUNITY MATRIX
LCA use for Circular Economy

Circular Model

Test the assumptions

Re-think and re-define the model

Insights for Implementation
Rethink and re(de)fine the models

Explore alternative approaches

Innovation opportunities

Circular Model v.1

Test scenarios

Circular Model v.2

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Route to circularity is a continuous process

- Starts with the Circular Business Model at a **product/operational** level
- **Test the assumptions** to know the impact
- Re-(de)fine the model
- Set **targets** and measure progress over time
- Monitor **progress**
- **Feed back** the Business Model
Live case work out
Dairy scores highly on the food waste ranking

TOTAL FOOD WASTE ... $162 Billion

VEGETABLES ... $30B
DAIRY .......... $29B
MEAT .......... $23B
FRUITS .......... $10B
POULTRY .......... $20B
FATS / OILS .......... $13B
GRAIN ................ $11B
EGGS ................ $3B
Evidently, dairy is responding to customer demand
So what happens when Ben & Jerry’s go circular...

THE ‘PINT POT’ CYCLE OF GOODNESS

Enjoy your Ben and Jerry’s Ice Cream.

Tear off the seed paper sleeve and combine it with soil inside your pint.

Name your new pal & don’t forget to give him water!

Watch your edible plant grow into a deliciously lean, green carbon killing machine.
QUESTION:
Identify your top 3 innovation opportunities on the basis of hotspot- and materiality analysis
The Ben & Jerry’s case work out (1/2) – data sheet

**Inside out**

![CoClear LIFE CYCLE ANALYSIS STUDY BEN & JERRY’S 2013 US PINT EMISSIONS]

**2013 IMPACT OF BEN & JERRY US PINTS**

- 1013 grams of CO2e emission on average per pint
- 136 million pints = 136,600 metric tons of CO2e emissions
- (Equivalent to 30,115 cars on the road for one year)

**IMPACT OF 16 BEN & JERRY’S PINT SKUS**

<table>
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<tr>
<th>Performance Metrics</th>
<th>Annual Total</th>
<th>Company Expense*</th>
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<tbody>
<tr>
<td>Direct Energy Consumed</td>
<td>6.7 million kWh</td>
<td>$955,722</td>
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<tr>
<td>Greenhouse Gas Emissions</td>
<td>35,478 metric tons CO2e</td>
<td>-</td>
</tr>
<tr>
<td>Direct Water Consumption</td>
<td>26 million liters</td>
<td>$54,170</td>
</tr>
<tr>
<td>Solid Waste Produced</td>
<td>918 metric tons</td>
<td>$13,023</td>
</tr>
<tr>
<td>Annual Production</td>
<td>35.4 million units</td>
<td>$32,2 million</td>
</tr>
</tbody>
</table>

- 10 Flavors
- 16 Pint SKUs
- 3 US Factories: St. Albans, Waterbury, Henderson

![Circle chart showing the impact of various activities: Retail 10%, End of Life 2%, Use 2%, Outbound Transportation 14%, Production 7%, Inbound Transportation 3%, Packaging 10%, Ingredients 52% (Dairy 41%, Cookie Dough 9%, Peanut Butter Cups 2%, Egg Yokes 4%, Suggared 1%, Sugar 1%, Cherry 1%, Cane Sugar 1%)]
The Ben & Jerry’s case work out (2/2) – data sheet

Outside in

The Dairy Sustainability Framework
- Local community involvement
- Human Capital Development
- Packaging
- Raw Material Sourcing
- Health & Nutrition
- Strategic Focus
- Innovation Management
Thank you for your attention

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