What the Heck Does Circular have to do with the Economy?
Canada united in the achievement of zero waste, now and for future generations
Linear Economy

The use of resources worldwide is outstripping supply

Image source: Terracycle
LINEAR ECONOMY

TAKE > MAKE > DISPOSE
TECHNICAL & BIOLOGICAL NUTRIENTS ALL MIXED UP
SOMETHING USEFUL

CIRCULAR ECONOMY

TECHNICAL NUTRIENTS

BIOLOGICAL NUTRIENTS

LIVING SYSTEMS

AFTER W. MCDONOUGH AND M. BRAUNGART

www.ellenmacarthurfoundation.org
GHG Emissions for Metals
Life Cycles for Landfilling vs. Recycling

Product Use
When metal is landfilled, new ore is mined to meet demand.

Landfill

Metal Processing and Manufacturing

Raw Material Extraction

Recycling Materials Recovery

Recycled Product

CO₂
Circular Economy

• Keep products & materials at highest utility and value
• Prevent waste through new business models & improved design
• Lengthen product life through re-use, repair or remanufacture
• Improve end of life processing and recovery
THE WORLD STAGE
Scaling the Circular Economy

"Like all major transitions in human history, the shift from a linear to a circular economy will be a tumultuous one. It will feature pioneers and naysayers, victories and setbacks. But, if businesses, governments, and consumers each do their part, the evolution of innovative business models and closed-loop concepts like remanufacturing, refurbishing and parts harvesting, will put the global economy on a path of sustainable growth. Many years from now, people will look back on it as a revolution."

Frans van Houten, CEO, Royal Philips
November 13, 2014
European Union

Ambitious Circular Economy Package

- Revised legislative proposals on waste
- Boost global competitiveness, foster sustainable economic growth and generate new jobs
Ontario

Strategy for a Waste Free Ontario: Building the Circular Economy

Reducing greenhouse gas emissions, saving resources, creating jobs and driving innovation
Waste to Wealth

Growth potential to 2030 in four linear economy waste areas

- Replace wasted resources: $1,700 Billion
- Monetize wasted capacity: $600 Billion
- Recover wasted embedded values: $1,300 Billion
- Prevent wasted lifecycles: $900 Billion

Source: Accenture 2015
Business Model Transformation

- Circular Supply Chains
- Sharing Platforms
- Products as a Service
- Recovery & Recycling
- Product Life Extension
- Material Processing and Manufacturing
- Logistics
- Sales & Retail
- Product Use
- Reverse Logistics
- End of First Use
Circular Supply Chain

Closing material loops

Regenerating natural assets
Product Life Extension

One of the most responsible things we can do is to make high-quality stuff that lasts for years and can be repaired so you don’t have to buy more of it.

- Rick Ridgeway, Patagonia
Customer as user of a service, rather than consumer of a product (pay per use)
Sharing Platform

I do not need a drill.
I need a hole in the wall.
Recovery & Recycling

Organic – Enterra

Technical – Novelis
Circular Economy Business Toolkit

Focus on:

- Business Strategy
- Design Innovation
- Stakeholder Engagement
Design Innovation

Designing for circularity means...

designing for many lifecycles and users while optimizing the positive environmental effects of the materials used and minimizing or eliminating the negative environmental effects.
Design Principles

- Durability
- Customer attachment and trust
- Ease of maintenance and repair
- Adaptability and upgradability
- Disassembly and reassembly
- Reuse, remanufacturing and remarketing
- Recyclability

NZWC Design Portfolio Products
The circular economy means addressing every link in economic value chains and eliminating the concept of waste, while creating shared prosperity.

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http://www.nzwc.ca
http://recycle.ab.ca