



The Future of Recycling & Waste Diversion within a Circular Economy Framework

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What'd'ya mean I have to learn another new term!?

...Scrap, Salvage, Recycling, 4Rs

(Reduce, Reuse, Recycle, Recover),

Waste Reduction, Waste Minimization,

Waste Diversion, Environmental

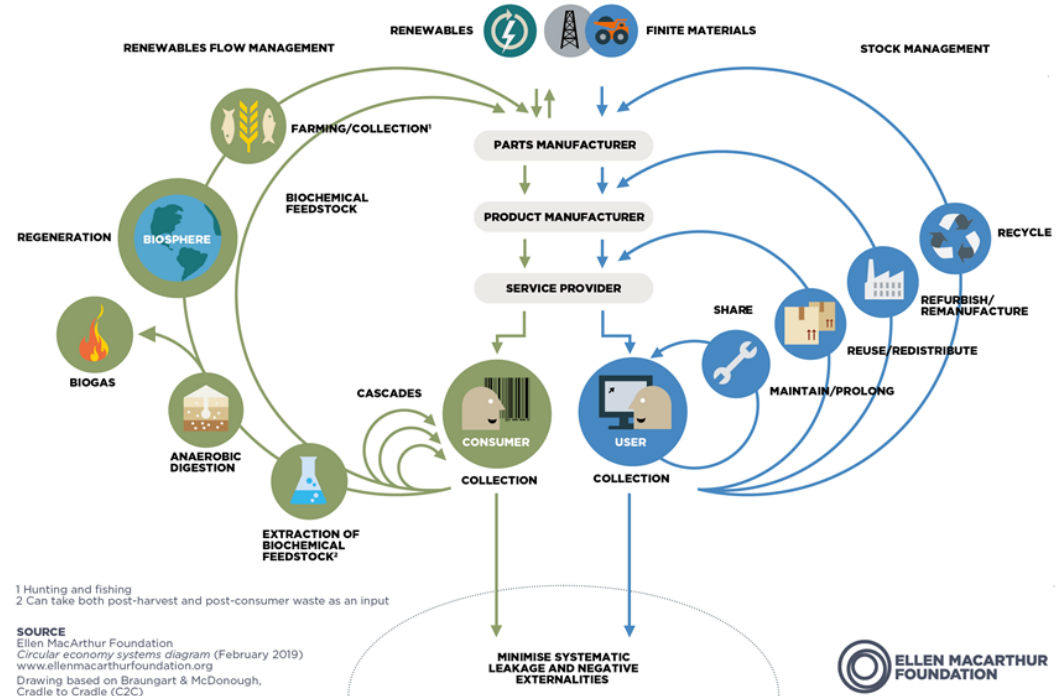
Sustainability, Sustainable

Development, Product Stewardship,

Zero Waste, Extended Producer

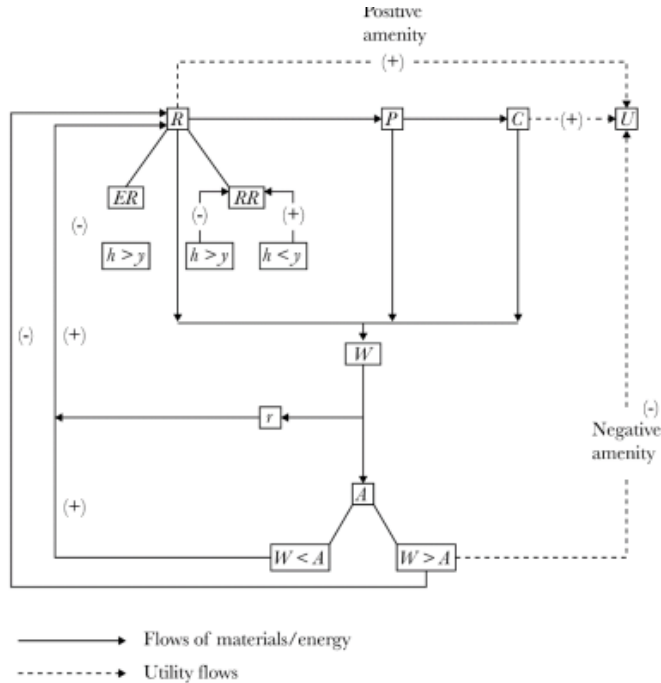
Responsibility...and now...

...Circular Economy



Circular Economy – The “Smarty Pants” Definitions

Figure 1.3. The ‘complete picture’ of a circular economy

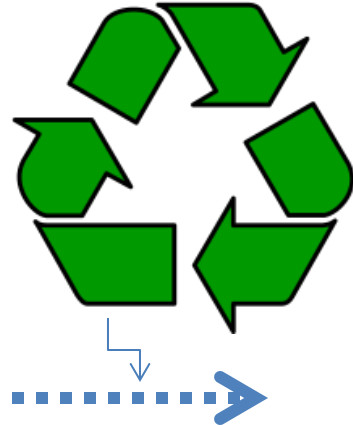


WTF?!

“circular economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations.” (Kirchherr et al. 2017)

Circular Economy – A new term, but not a new idea

First Nations peoples' have a special relationship with the earth and all living things in it...Everything is taken and used with the understanding that we take only what we need, and we must use great care and be aware of how we take and how much of it so that future generations will not be put in peril. www.afn.ca/honoring-earth/



Human History

The Linear Economy – Take, Make, Waste

TAKE



MAKE



WASTE



Ex. Packaging in the Linear Economy

- ✓ Holds and protects contents
- ✓ Secures against tampering and/or unsafe use
- ✓ Provides space for communicating important/required information to consumers
- ✓ Is a key part of product marketing and branding
- ✓ Facilitates inventory tracking and control
- ✓ Helps discourage shoplifting



TAKE

MAKE

WASTE

Looking at Packaging “Waste” through a Circular Economy Lens



Could we redesign the packaging to utilize materials that could be composted and returned to the soil as nutrients?

Can we reduce the amount of paper, plastic needed simply by redesigning the package?

Is there a more sustainable packaging option available?

Is there a better method to discourage shoplifting than over-sized packaging?

Is there a way to use just one type of material to make it easier to recycle?

Are there less toxic inks, dyes and adhesives available?

Can we increase the amount of recycled content in the packaging design?

Could product be sold in reusable container?

How do we help encourage and facilitate recycling once consumer leaves store?

Ex. 2 - Leaf and Yard “Waste” in the Linear Economy

TAKE



MAKE



WASTE



Ex. 2 - Leaf and Yard “Waste” through a Circular Economy Lens

KEEP PRODUCTS AND MATERIALS IN USE

How do we establish and operate an efficient and effective leaf and yard waste composting program ?

Who is producing and/or selling soil in our community? Can we approach them to discuss possibilities for capturing nutrients from locally generated leaf and yard waste?

Are there community gardens or food security programs in place in our community? Can leaf and yard waste become a good source of nutrients for such programs?

DESIGN OUT WASTE AND POLLUTION

Does our public works staff collect and haul grass clippings and leaves from public spaces they service? Can we change our process/equipment to allow leaving clippings/mulch in place.

Can we encourage/incent our residents to keep their grass clippings and mulched leaves on their lawns as nutrients instead of hauling them to landfill/transfer site?

REGENERATE NATURAL SYSTEMS

Does our public works use soil or organic material? How much do they spend each year on sourcing that material. In which applications might we be able to use leaf and yard waste as a substitute?

Are there any parcels of land in the community that could benefit from the nutrients contained in leaf and yard waste?

Sample Circular Economy Strategy – Leaf & Yard Waste

KEEP PRODUCTS AND MATERIALS IN USE	DESIGN OUT WASTE AND POLLUTION	REGENERATE NATURAL SYSTEMS
<ul style="list-style-type: none"> ✓ We will develop a business and operational plan for establishing a leaf and yard waste collection area at our landfill/waste transfer site for residents and local businesses to drop off materials. 	<ul style="list-style-type: none"> ✓ We will purchase and install mulching blades on Public Works mowers and train staff to leave grass clippings and mulched leaves in place so as to recover nutrients and avoid having to haul and manage the materials as “waste” ✓ We will implement a public education campaign to encourage residents to leave their grass clippings and mulched leaves on their lawn. 	<ul style="list-style-type: none"> ✓ We will consult with technical experts to evaluate options and determine necessary steps and procedures for converting leaf and yard waste (and other inputs as necessary) into usable soil/compost. ✓ We will consult with local businesses, community garden organizers and/or nearby agricultural producers to determine viable end uses for processed leaf and yard waste

Ex. 3 – Framing Lumber through Circular Economy Lens



**DESIGN OUT WASTE
AND POLLUTION**

**KEEP PRODUCTS AND
MATERIALS IN USE**

**REGENERATE
NATURAL SYSTEMS**



\$1,449.99



Key Takeaways

1. At it's core, Circular Economy is about



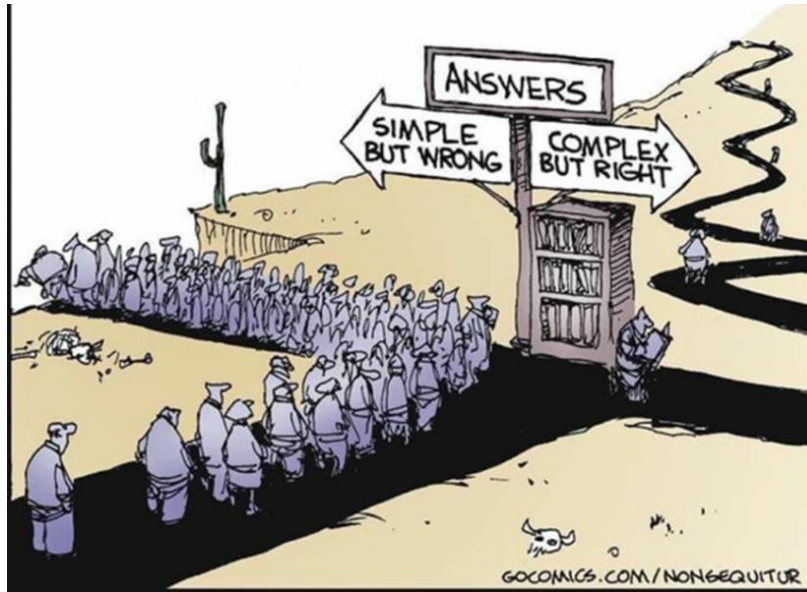
“The Earth is full. It's full of us, it's full of our stuff, full of our waste, full of our demands. This is not a philosophical statement, this is just science based in physics, chemistry and biology”.

Excerpt from “Paul Gilding: The Earth is Full”, TEDTalks, 2012.

Key Takeaways

2. Circular Economy is an ideal that is contingent on all parts of the economic system working **interdependently** towards a common goal. We need government, companies, consumers, elected officials, supply chain managers, and everyone else involved in this global task.

- ✗ *Bury it*
- ✗ *Burn it*
- ✗ *Litter it*
- ✗ *Dump it in the lake*



- ✓ Design it smarter in the first place
- ✓ Repair it
- ✓ Reuse it
- ✓ Recycle it
- ✓ Recover nutrients from it
- ✓ Recover the energy embedded in it
- ✓ ...

Key Takeaways - Most important of all...

3. Be strategic. Be practical, Be proactive! Use the principles of Circular Economy to broaden your set of options and develop solutions for diverting the “waste” you’re tasked to manage in your community/region.

Bonus Tip: Stop thinking and talking about “waste” as one big lump. If we are going to be successful in transitioning to a Circular Economy, we need to recognize that what many call “waste” is made up of a wide range of separate categories of products, materials and **resources** that will need to be understood and planned for separately.



Thank you for letting me be part
of this important discussion!



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*The images on this presentation were sourced from various websites and are being used for educational purposes only.

- Slide 2,7 - <https://archive.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>
- Slide 4 – recycled byzantine glass - https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_597/https://timelessinnovativecreativity.co.za/wp-content/uploads/2020/03/byzantine-art-antique-glass.jpg
- Slide 4– scrap collection buggy - https://liip.cdn-website.com/1560ba25/dms3rep/multi/opt/recycling_history-450x287-1920w.jpg
- Slide 4 – War time poster - <https://www.history.com/news/recycling-history-america>
- Slide 4– 1930s recycling depot - https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_220,h_208/https://timelessinnovativecreativity.co.za/wp-content/uploads/2020/03/220px-Recycle001.svg_.png
- Slide 4 – https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_474,h_369/https://timelessinnovativecreativity.co.za/wp-content/uploads/2020/03/wartime-recycling.jpg
- Slide 5 – trees on truck - https://e8x4d3t2.rocketcdn.me/wp-content/uploads/2016/01/Truck_load_of_ponderosa_pine_Edward_Hines_Lumber_Co_operations_in_Malheur_National_Forest_Grant_County_Oregon_July_1942-1-768x572.jpg
- Slide 5 – oil drill - https://i.cbc.ca/1.3238194.1590425636!/fileImage/httpImage/image.jpg_gen/derivatives/16x9_780/canada-energy.jpg
- Slide 5 – <https://www.nortonrosefulbright.com/-/media/images/nrf/hero/infrastructure-mining-trucks.jpg?revision=c2a3f4f2-0f81-40d5-9f3e-fb62ad066955&revision=c2a3f4f2-0f81-40d5-9f3e-fb62ad066955>
- Slide 5 - transmission lines - <https://globalnews.ca/wp-content/uploads/2020/06/dpi11366213.jpg?w=2048>
- Slide 6, 7 – Photo of Kirkland brand vitamins package - <https://www.costco.ca/kirkland-signature-vitamin-b12%2c-360-tablets.product.100479419.html>
- Slide 8 – sod on pallet - <http://cdn.homeguide.com/assets/images/content/homeguide-pallet-of-sod-delivered-for-residential-landscaping.jpg>
- Slide 8 – tree nursery – <https://www.erniplants.com/assets/images/vancouver-nurseries-richmond-nursery-wholesale-shrubs-trees-plants.jpg>
- Slide 8 – Filling mower with gas <https://harmonybrands.com/wp-content/uploads/2016/02/ThinkstockPhotos-87552803.jpg>
- Slide 8 – bagged Lawn soil https://da.lowes.ca/webassets/images/159200_03618007_001_l.jpg
- Slide 8 – spreading lawn fertilizer <http://plantforsuccess.com/wp-content/uploads/2019/03/fertilizing-lawn.jpg>
- Slide 8 – watering lawn and trees - <https://hips.hearstapps.com/hmg-prod.s3.amazonaws.com/images/two-sprinklers-on-lawn-1618245753.jpg>
- Slide 8 – grass clippings in garbage bag - <https://flatrate-junkremoval.com/wp-content/uploads/2021/04/yard-waste-bags-lowes.jpg>
- Slide 8 – pile of garbage bags with yard waste - <https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQljAsffMjOZM9d0muQcSmSyEusBaPpU5I7DQ&usqp=CAU>
- Slide 8 - burning leaves - <https://www.gannett-cdn.com/-mm-/a6560cc2b5fba5a9364a9e31d413fa4044ae9f2a/c=0-0-3261-1842/local/-/media/2016/11/18/MIGroup/Livonia/636150708716168983-LIVBrd-11-12-2015-Milford-1-A006-2015-11-10-IMG-mto-leaf-burning-1-1-ADCGOAT5-L708173604-IMG-mto-leaf-burning-1-1-ADCGOAT5.jpg?width=660&height=373&fit=crop&format=pjpg&auto=webp>
- Slide 11 – wayfair.ca
- Slide 13 – “Simple but Wrong”, Non sequitur comics, http://www.realclear.com/comics/non_sequitur/2016/01/20/