

# Conservation of Resources

## Shifting to More Circular Systems

Optimizing material use enables us to play our part in the circular economy. It means doing more with less, maximizing the value of materials while in use, and then recovering and regenerating products and materials at the end of their life.

We work collaboratively across the value chain to support sustainable production and consumption. Our employees are highly engaged in working together to optimize materials and minimize waste in our operations.

### Sourcing Sustainable Materials

We are committed to sourcing more environmentally friendly products and services, working together with our suppliers to consider better alternatives across the entire product life cycle. For example, we've introduced innovative biodegradable degreasers at our maintenance centres, worked with suppliers to advance the use of renewable energy in our rail and non-rail fleet, and collaborated on packaging optimization such as boomerang boxes, pallets and bulk packaging.

### Extending Resource Life

We continue to explore opportunities to extend the useful life of our assets through reuse and recycling programs. For example, we have reuse programs in place for used oil, concrete ties and engine coolants. We also reuse wastewater from treatment plants to wash locomotives.

A pilot project was successfully implemented with our primary supplier of locomotive lead acid batteries, where we continue to re-qualify and put them back into service.

### Diverting Waste

Our employees are engaged through our EcoConnexions program to explore innovative solutions to divert materials from landfills through reuse and recycling programs. Through increased awareness and sharing of best practices, we have successfully deployed programs to recycle paper, cardboard, batteries, electronic waste, scrap metals, rail, railcars, and rail ties. In 2018, we diverted approximately 90% of our operational waste from landfills.



WASTE DIVERTED FROM LANDFILL IN 2018 AND SENT INSTEAD FOR REUSE OR RECYCLING



### Recycling Rail Assets – Steel Scrap Material

*“We work with various partners to extend the life of our rail assets, including steel rail tracks, locomotives, railcars, and concrete rail ties, enabling us to significantly improve resource productivity.”*

*Our Asset Sales Team plays an active role in ensuring we find sustainable and economic solutions to recycle our rail assets. In 2018, they successfully found a scrapper company that met our standards to dismantle and recover the steel from out-of-use equipment at our Conneaut Docks. The multi-faceted benefits included the diversion of 3,000 gross tons of scrap from landfill, a safe site and enhanced land value, and revenue generated from the sale of the scrap metal.”*

JOSÉE CHAMBERLAND  
Agent, Asset Sales, Montreal

Introduction

Environment

Overview

Carbon and  
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SPOTLIGHT

## EcoConnexions Engaging Employees to Take Action

Launched in 2011, in partnership with Earth Day Canada, our EcoConnexions program encourages employees to work collaboratively to reduce energy consumption, minimize waste and improve housekeeping practices.



**Conserving Energy at Joffre Yard:** After CN's Energy Management Information System detected high power usage at Joffre Yard in Quebec, Samuel Letendre, Electrician Lead Hand, found that installing a new air compressor would save \$20,000 per year in electricity.

**Reusing Concrete Ties:** When a building at MacMillan Yard, Toronto, was demolished, instead of reselling the concrete on a secondary market, the team decided to reuse the 19,300 metric tonnes to build a new car park.

**Minimizing Waste with Bulk Purchasing:** Mike Singelyn, Senior Manager Materials and Facilities, Southern Region, works with vendors to supply track maintenance materials with less packaging. Purchasing loose rail anchors in bulk by gondola car saves \$130,000 annually and eliminates 270,000 plastic bags.

**Improving Housekeeping:** All seven mechanical car shops in Western Canada took up the "Golden Hammer" challenge, launched in 2017 by Gerry Harder, Mechanical Regional Officer in Edmonton, AB, to drive housekeeping, safety and efficiency improvements.

Since 2011 our employees have achieved:

- 33% carbon reduction at key yards (86,000 tonnes)
- 200,000 tonnes of waste diversion from landfill
- 1,500+ housekeeping projects leading to cleaner, more efficient and safer work environments
- approximately \$50 million in cost savings



Minimizing Waste with Bulk Purchasing



Reusing Concrete Ties



Conserving Energy at Joffre Yard



Improving Housekeeping

EcoCONNEXIONS



## Contributing to the Circular Economy

Many of the capital assets we use to run the railroad are inherently sustainable. Most of our steel rail tracks, locomotives, railcars, ballasts, and rail ties have lifespans beyond 25 years and we further extend their useful life through reuse and recycling programs. Through innovative solutions we can play an important role, at each stage of our value chain, for greater resource efficiency and circularity.

## INDUSTRIAL SYMBIOSIS

Rather than sending our used ties to landfill, we collect, chip and ship them to some of our customers, like Kruger. Providing a mutually beneficial input for use as biomass to power their cogeneration plants.

## REUSING MATERIALS

Locomotive lead acid batteries are re-qualified and put back into service. We also repair and reuse concrete ties. Used oil, engine coolants and wastewater are also reused.

We are collaborating with industry partners and suppliers to shift mindsets towards material stewardship, focusing on the protection and renewal of resources.

## MAXIMIZING THE LIFE OF MATERIALS

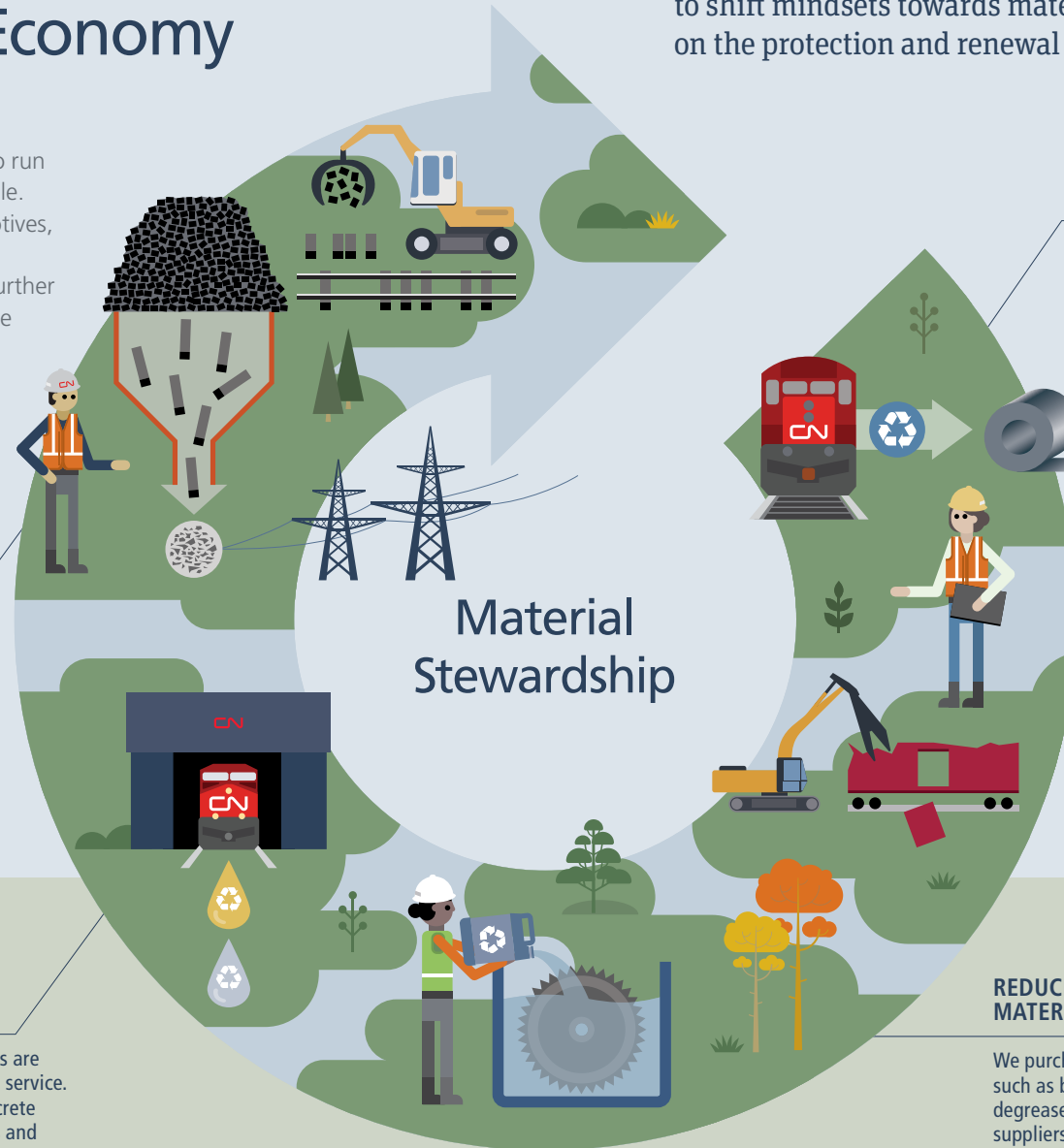
Both locomotives and steel rail tracks are reused from the main lines to our secondary lines and then at our yards and finally sold to be recycled into new steel products.

## RECYCLING

Railcars are reused until they reach the end of their life when they are then dismantled and sent for recycling. We also recycle concrete ties for sub-grading in our yards.

## REDUCING MATERIALS AT SOURCE

We purchase innovative products such as bio-renewable cleaners and degreasers, and collaborate with suppliers on recycled packaging and optimization through bulk purchasing.







PICTURED:  
CN's wood chipper facility at Garneau Yard, where legacy rail ties are processed into rail tie chips and sent to Kruger to generate energy at their plants.

## Turning Used Rail Ties into Energy

Our partnership with Kruger, a North American leader in paper and paperboard recycling and a long-standing CN customer, has enabled us to ensure used rail ties are transformed into renewable energy and diverted from landfills.

To ensure safe and efficient operations across our network, every year we replace roughly two million rail ties. Looking for an alternative to discarding the old wood rail ties, we turned to our customers, including Kruger, who use the wood waste for power generation.

Our legacy rail ties are collected, sorted and shipped by rail car to our Garneau, Quebec, yard for chipping. The rail tie chips are then sent to Kruger, who uses the wood waste to power its biomass cogeneration plants in Trois-Rivières and Brompton, Quebec.

“Diverting old rail ties from landfill to Kruger’s mills is a win-win-win for the environment, CN and Kruger,” says Paul de Blois, Vice-President, Recycling at Kruger.

In 2017 alone, the partnership diverted over 692,000 of CN’s rail ties and generated approximately 171 GWh of clean energy at Kruger facilities.

97%

OF OUR SCRAP RAIL TIES ARE NOW RECOVERED