



Envirothon NB

2022

Waste to Resources Scenario





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Landfilling is a part of integrated solid waste management systems. Disposal of materials to a landfill is the least preferred management option in the waste management hierarchy after reduce, reuse, recycle and recovery options have been exhausted. However, even with high diversion rates, landfills will continue to remain an essential component of solid waste management systems in order to deal with the wastes that cannot be practically removed from the waste stream. The waste received at landfill operations originates from two primary sources: 1) residential and 2) Industrial, Commercial, and Institutional facilities (ICI).

Regional Service Commission #5 is one of six commissions within the province that provide waste disposal services (Table 1). Although smaller than other regions, it has recently been experiencing considerable population growth, resulting in urban sprawl due to a lack of available land within the urban centre. The landfill was built many years ago, at a location outside the urban centre, but neighbourhoods are getting closer.

In addition to disposal of waste within an engineered landfill, the facility offers other services that include voluntary recycling programs for paper, plastics and metals, a location for the proper disposal of household hazardous waste (HHW) and Construction, Renovation, Demolition debris (CRD) in addition to conducting public education and awareness programs. The landfill operation also accepts materials listed within provincially regulated programs managed by recycle New Brunswick, which include paint, oil, glycol and electronic waste at no charge.

Environmental monitoring and mitigation infrastructure at the landfill include groundwater and gas monitoring wells, leachate collection and treatment, landfill gas collection and flaring, perimeter fencing and a comprehensive pest control program to ward off rodent activity at the site.

Revenue for the landfill facility comes predominately from tipping fees, which are set at \$100/metric tonne (MT) for residential, Industrial Commercial and Institutional waste, \$50/MT for Construction, Renovation and Demolition and \$40/MT from blue box recyclables. All remaining disposal services are provided with no charge. Potential revenue streams may include, but are not limited to, electricity production, carbon credits, and government funding for public education and awareness campaigns. Typical expenses include site infrastructure and equipment costs, employee wages, site maintenance and fuel.

In 2017, Environment and Climate Change Canada set an aspirational goal to reduce the amount of waste landfilled (Residential+ICI+CRD) to 490 kg/person/year by 2030 and to 350 kg/person per year by 2040.



Team Challenge

Your team has been hired as a consultant by Regional Service Commission #5 to provide information to the general public with respect to what is currently diverted from landfilling, how these materials are disposed of in order to protect the environment, and explore opportunities of markets for recyclable materials recovered. In addition, your group is to provide advice on how more materials could be diverted from the landfill. The presentation should include but is not limited to a brief overview of the current landfill operation and the findings and recommendations from your study taking into consideration current legislation as well as environmental, economic, and social impacts from activities at the regional landfill operation.

Data Resources

The two tables below provide additional information on the volumes of waste and recyclables in all provincial regions (Table 1) as well as 2016 national composition of landfilled waste (Figure 1).

Table 1: Regional Service Commission summary of population, weight (metric tonnes/MT) for Residential & ICI garbage, residential recycling, organics and HHW, ICI recycling, Construction Renovation and Demolition debris (CRD), and green house gas emissions tonnages (tonnes CO₂e).

Region	Population	Residential				ICI		CRD	Total (MT)	GHG Emissions (tonnes CO ₂ e)
		Garbage	Recycling	Organics	HHW	Garbage	Recycling			
1	275,000	21,000	18,000	22,000	240	90,000	3,000	11,000	165,240	105,000
2	118,000	20,000	6,000	12,000	90	45,000	300	6,600	89,990	65,000
3	62,000	18,000	2,000	0	50	15,000	60	1,100	36,210	40,000
4	140,000	44,000	6,000	0	150	40,000	100	18,000	108,250	45,000
5	47,000	20,000	1,100	0	75	15,000	150	1,000	37,325	60,000
6	144,000	32,000	5,000	0	135	55,000	100	6,000	98,235	110,000
Total	786,000	155,000	38,100	34,000	740	260,000	3,710	43,700	535,250	425,000

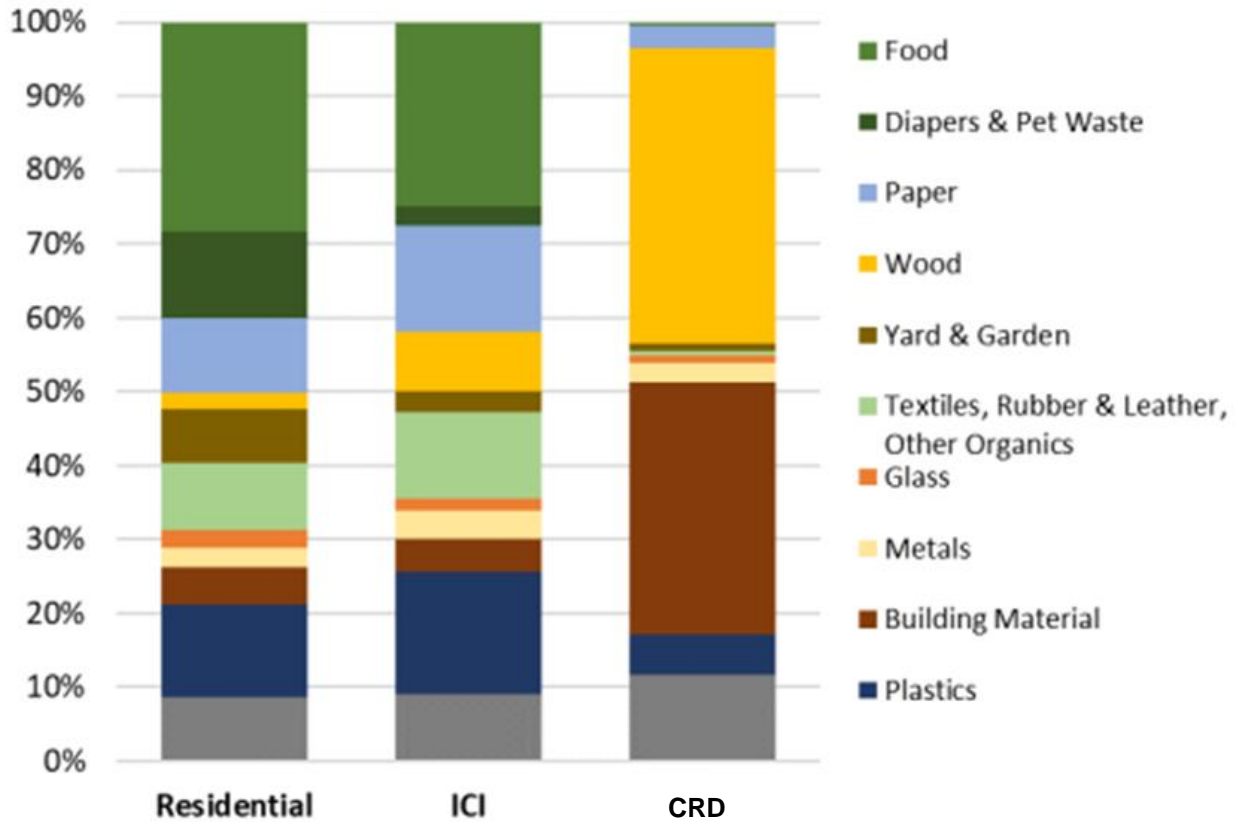


Figure 1: National average of municipal solid waste by sector (2016).



Glossary of Terms

This section provides an alphabetical listing of the three waste types referenced within the scenario and their meaning and/or description to enable a common understanding.

<p>Construction, Renovation and Demolition Waste (CRD)</p>	<p>Waste disposed of at an approved construction, renovation, and demolition disposal site and is obtained during the construction, renovation or demolition of a building or structure. This material includes: concrete, brick and untreated wood; siding, ceiling tile, Gyproc and insulation; asbestos that is not friable, solid roofing material such as asphalt shingles; glass from doors and windows; metal, wood and durable plastic structural materials; wiring and incandescent light fixtures that do not contain fluorescent tubing/lighting; toilets, bathtubs, wash basins, and plumbing fixtures; floor coverings attached to a building during demolition; broken and aged asphalt and; any mixture of the above.</p>
<p>Household Hazardous Waste (HHW)</p>	<p>Items that are corrosive, flammable, explosive or poisonous that are used within the home. Items include but are not limited to: cleaning products, pesticides, paints, solvents, adhesives, car and garage products (i.e. antifreeze, oil, windshield washer fluid), mercury containing bulbs and thermostats and swimming pool chemicals.</p>
<p>Industrial, Commercial and Institutional Waste (ICI)</p>	<p>Includes discards from businesses, large multi-residential complexes, industries and institutions like hospitals and schools and includes a wide range of materials from food waste to paper and everything in between.</p>
<p>Residential Waste</p>	<p>Includes all non-hazardous waste produced by residences, which is collected either municipally or brought by individuals to local disposal facilities. Does not include waste from large multi-residential complexes.</p>