Intelligence MEMOS

From: Brian Livingston

To: The Hon. Steven Guilbeault, Minister of Environment and Climate Change

Date: December 16, 2022

Re: COUNTING CARBON IV: A REALITY CHECK ON OUR EMISSION REDUCTION PLAN

The federal government's ambitious Emissions Reduction Plan (ERP) set out targets for seven economic sectors as it aims to cut 2030 emissions by 42 percent from 2019 levels. But the ERP is merely a plan to have a plan. It contains no specific steps to meet its targets, or any mechanism for measuring annual progress towards such target. This special series of Intelligence Memos introduces forecast models for all seven sectors (see previous entries of the largest emitting sectors of transportation, oil and gas, and buildings) with a realistic assessment of measures needed to meet Ottawa's goals. These will be used to predict annual emissions from each sector from 2020 to 2030. The charts and spreadsheets underlying this work can be found here.

Today: Heavy industry, electricity, agriculture and "waste and other" sectors, as well as land use policies, which collectively make up 37 percent of total 2019 emissions.

As the table outlines, the federal government wants an aggressive 2030 target of 136 million tonnes (MT), down from 272.

	2019 Emissions	2030 Targets
Heavy Industry	77	52
Electricity	61	14
Waste and other	51	29
Agriculture	73	71
Land Use	10	-30
Total	**272**	**136**

Ottawa breaks heavy industry into seven sub-sectors, the largest of which are cement, pulp and paper, steel, chemicals and metal smelting. Electrification at steel mills, and some electrification and process improvements in the other sub-sectors drives significant greenhouse gas emission reductions. The overall 2030 heavy industry forecast of 62 MT still sits 10 MT above the Ottawa target of 52 MT.

Electricity is divided by fuel source: Coal, natural gas and oil. Major reductions are forecast from the complete elimination of coal in Alberta, reductions of coal in Saskatchewan and Nova Scotia, increased supply from wind and solar, and the use of carbon capture for some natural gas plants. My model forecasts total electricity sector emissions at 18 MT, slightly above Ottawa's 14 MT goal, but well down from the 61 MT in 2019.

"Waste and other" has its own three sub-sectors, namely solid waste, other waste and light manufacturing. Most emissions here come from landfills producing methane, which is difficult to reduce. Light manufacturing does lend itself to some electrification-based reductions. The forecast for total waste and other sector emissions in 2030 is 39 MT, down from the 51 MT in 2019 and 10 MT above the Ottawa target of 29 MT.

Agriculture has three sectors as well: animals, farm equipment energy use and land. Emissions from animals and crops largely come from food digestion (methane) and fertilizers (nitrous oxide.) Both are hard to cut. Ottawa is already under siege for its 30-percent fertilizer emission reduction target. Again, electrification is the major source of reductions, mainly for agricultural equipment. The forecast for total agricultural sector emissions in 2030 is 72 MT, down from the 73 MT in 2019 and 1 MT above the Ottawa target of 71 MT.

Land use consists mainly of tree planting, land management, wood harvesting and other activities that can create carbon sinks that absorb emissions. Land use in 2019 actually produced a net 10 MT of emissions, as tree cutting outweighed tree planting. The forecast includes the aggressive planting plans for shifting that balance by creating net carbon sinks by 2030, but still not as much as targeted by Ottawa. The overall forecast for land use sector emissions in 2030 is -15 MT, down from the +10 MT in 2019 and 15 MT above the Ottawa target of -30 MT.

That brings the four-sector emission forecast for emissions in 2030 to 176 MT, down almost 100 MT from 2019, but considerably short of Ottawa's ERP target of 136 MT.

Heavy Industry, Electricity, Waste and Other, Agriculture, Land Use
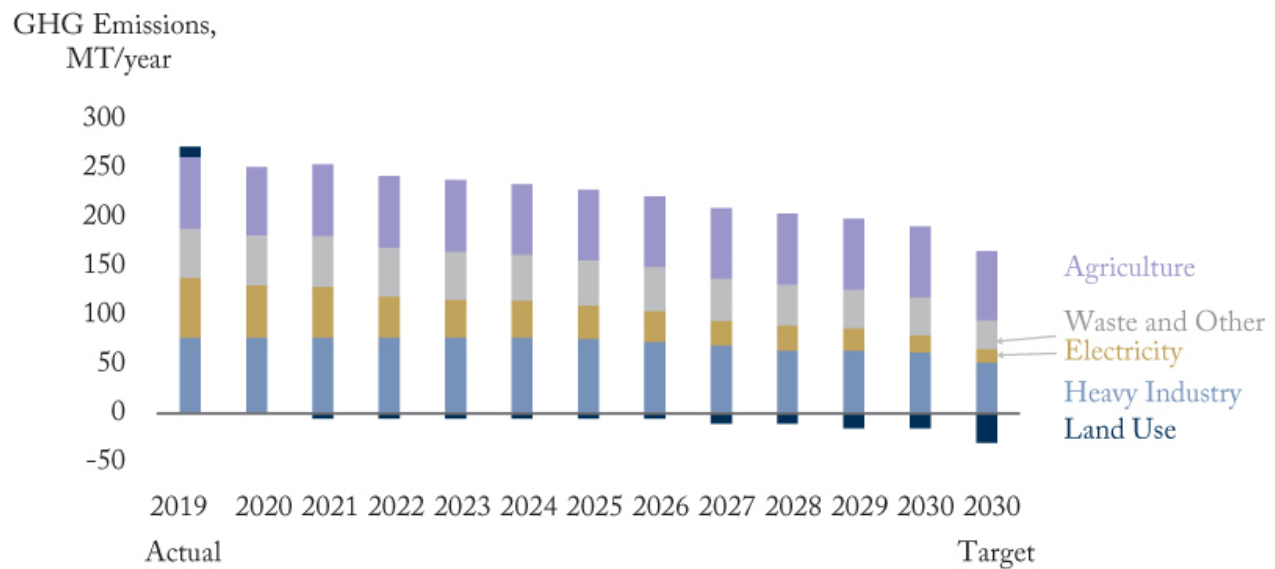
Brian Livingston is Executive Fellow at the School of Public Policy at the University of Calgary.

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