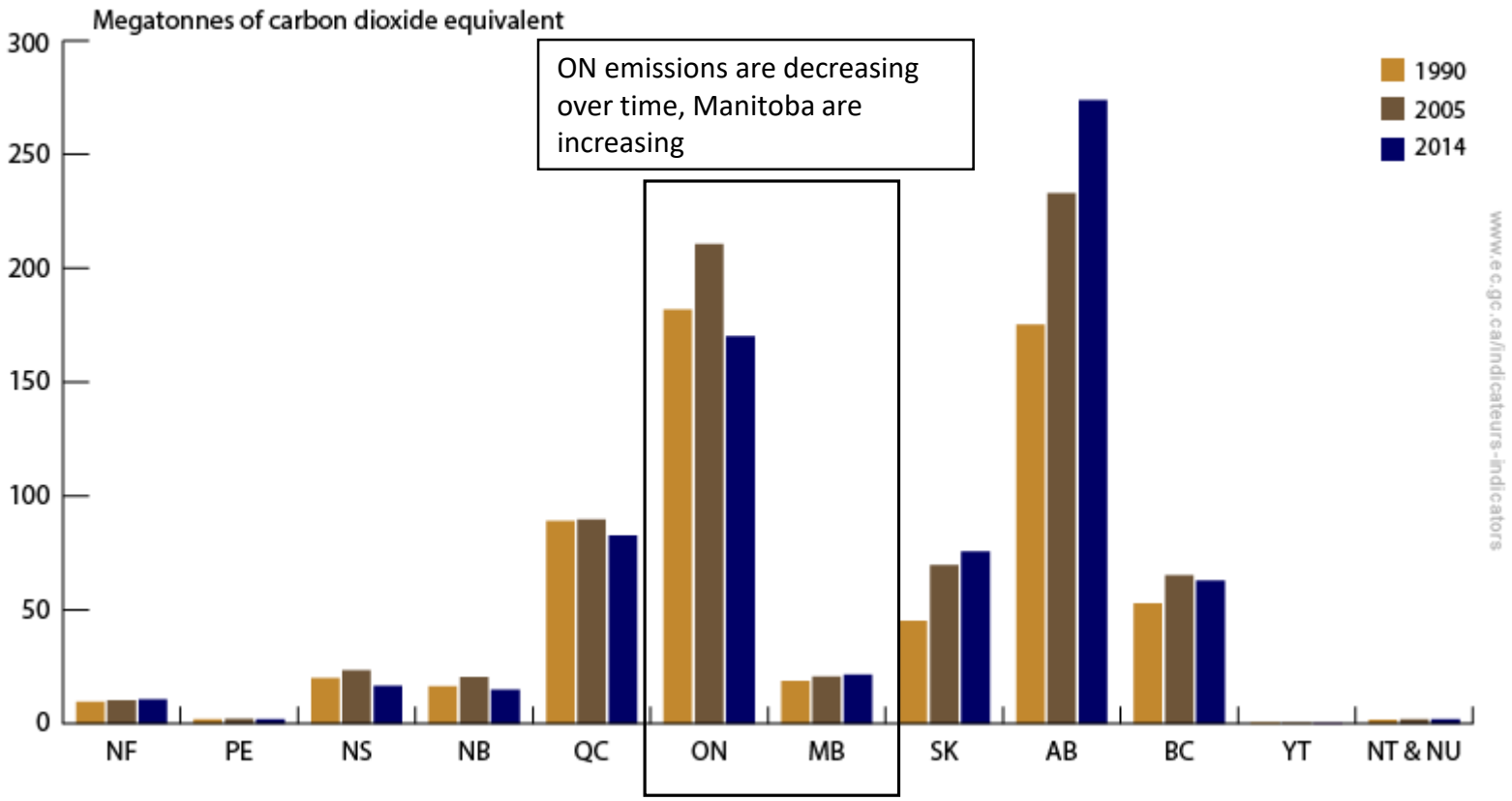
Barriers towards low carbon transition in Canada: Focus Ontario and Manitoba

Canada Emissions Profile

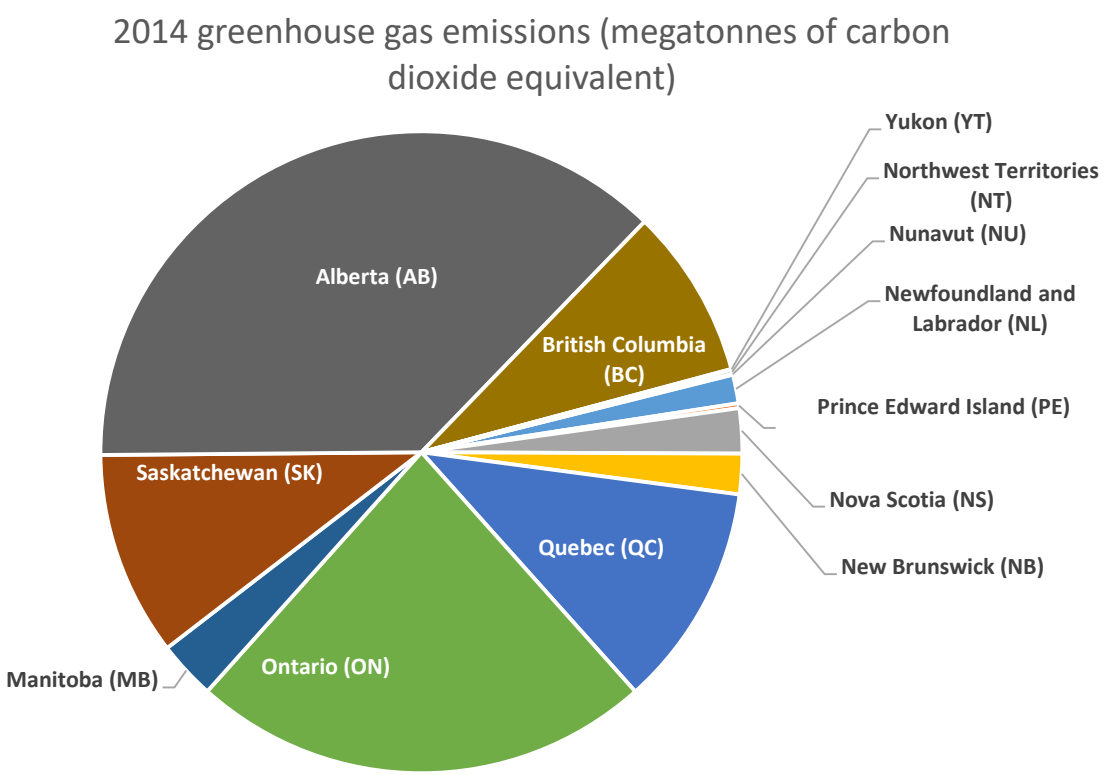


Province or territory	1990*	2005*	2014*
Newfoundland and Labrador (NL)	9.6	10.2	10.6
Prince Edward Island (PE)	2	2.1	1.8
Nova Scotia (NS)	20	23.5	16.6
New Brunswick (NB)	16.4	20.5	14.9
Quebec (QC)	89.1	89.7	82.7
Ontario (ON)	181.8	210.6	170.2
Manitoba (MB)	18.7	20.7	21.5
Saskatchewan (SK)	45.1	69.6	75.5
Alberta (AB)	175.2	233	273.8
British Columbia (BC)	52.9	65.2	62.9
Yukon (YT)	0.5	0.5	0.3
Northwest Territories (NT)	1.6[A]	1.7	1.5
Nunavut (NU)	n/a	0.3	0.3

*greenhouse gas emissions (megatonnes of carbon dioxide equivalent)

Suggested citation for this document: Environment and Climate Change Canada (2016) Canadian Environmental Sustainability Indicators: Greenhouse Gas Emissions. Consulted on *day Month, year*. Available at: www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=FBF8455E-1.

Province as % of total emissions for Canada



Province or territory	2014	Inc/ Dec
Newfoundland and Labrador (NL)	1.4%	Dec
Prince Edward Island (PE)	0.2%	Dec
Nova Scotia (NS)	2.3%	Dec
New Brunswick (NB)	2.0%	Dec
Quebec (QC)	11.3%	Dec
Ontario (ON)	23.2%	Dec
Manitoba (MB)	2.9%	Inc
Saskatchewan (SK)	10.3%	Inc
Alberta (AB)	37.4%	Inc
British Columbia (BC)	8.6%	Dec
Yukon (YT)	0.0%	Dec
Northwest Territories (NT)	0.2%	Dec
Nunavut (NU)	0.0%	Steady

1. 5 Provinces, AB, BC, QC, ON, and SK make up 90.8% of the overall emissions.
2. Of these 5 provinces, only SK and AB continue to increase their emissions profile.

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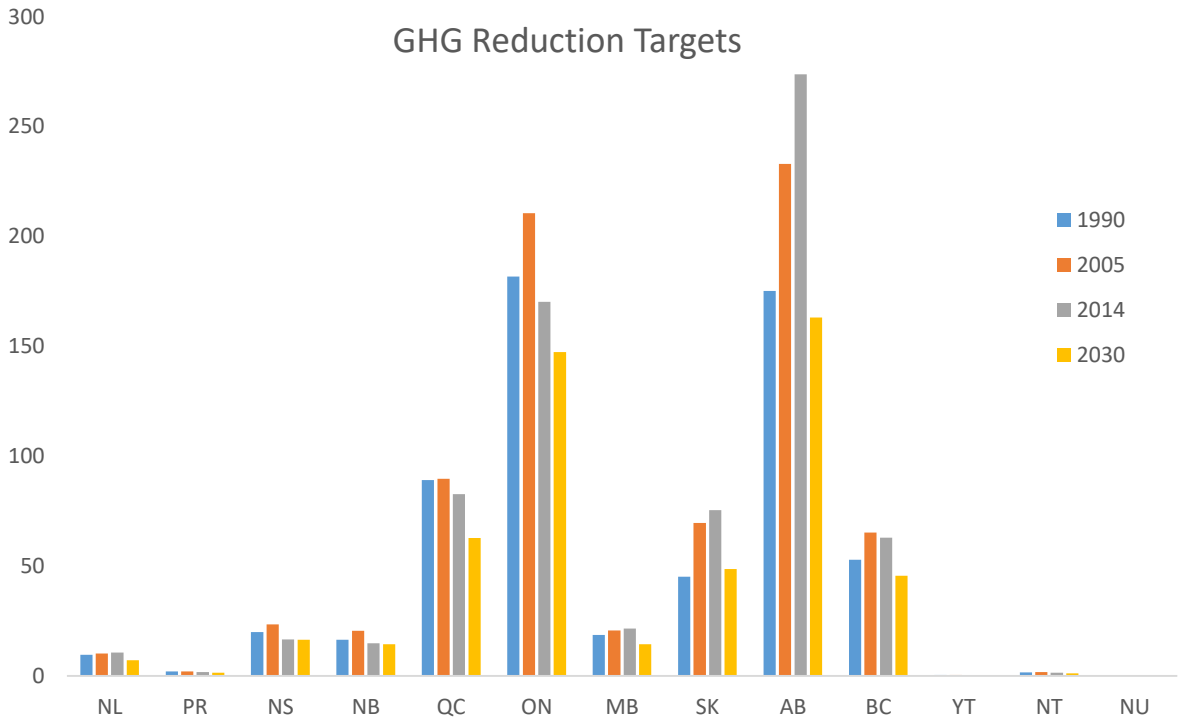
Canada's commitment 30% reduction to 2005*

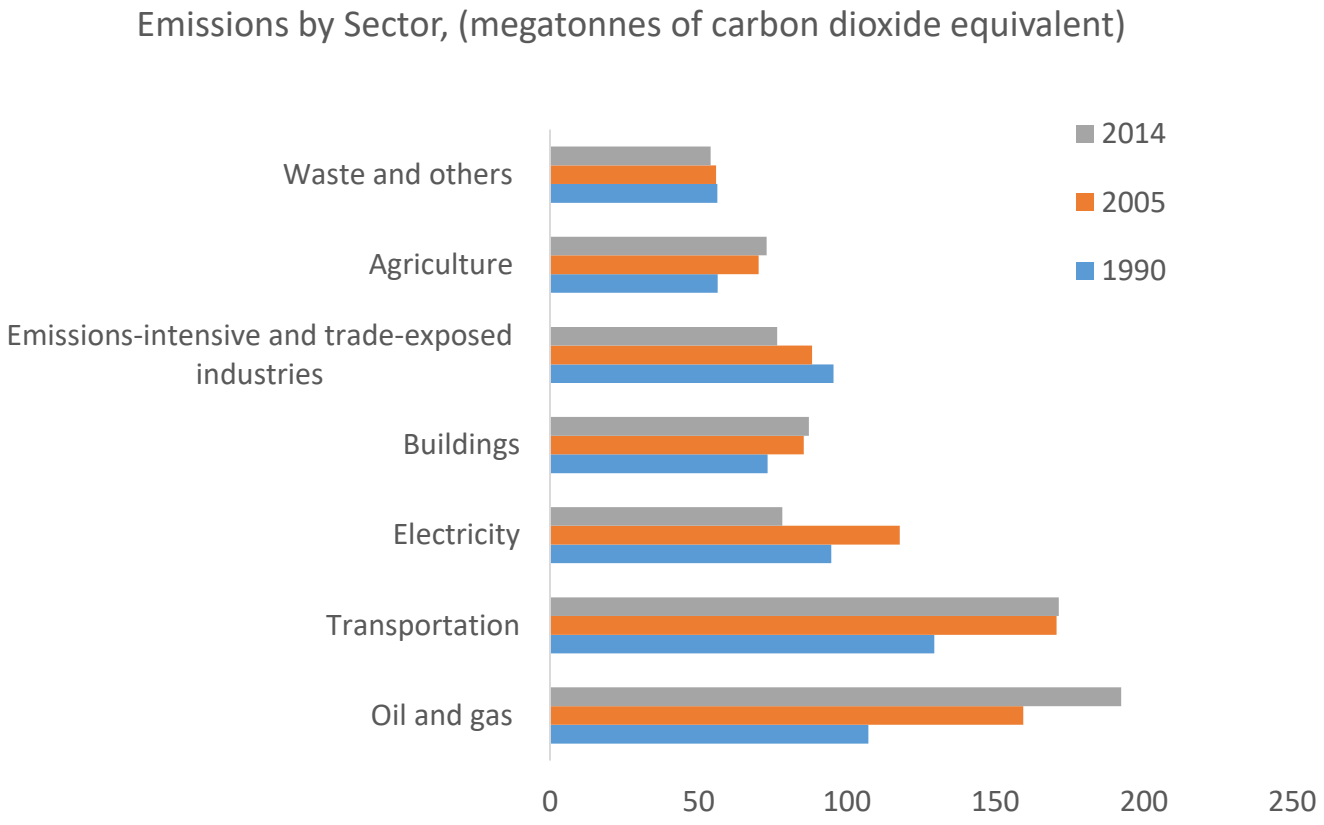
Province or territory	1990**	2005**	2014**	2030 extrapolated**
Newfoundland and Labrador (NL)	9.6	10.2	10.6	7.14
Prince Edward Island (PE)	2	2.1	1.8	1.47
Nova Scotia (NS)	20	23.5	16.6	16.45
New Brunswick (NB)	16.4	20.5	14.9	14.35
Quebec (QC)	89.1	89.7	82.7	62.79
Ontario (ON)	181.8	210.6	170.2	147.42
Manitoba (MB)	18.7	20.7	21.5	14.49
Saskatchewan (SK)	45.1	69.6	75.5	48.72
Alberta (AB)	175.2	233	273.8	163.1
British Columbia (BC)	52.9	65.2	62.9	45.64
Yukon (YT)	0.5	0.5	0.3	0.35
Northwest Territories (NT)	1.6[A]	1.7	1.5	1.19
Nunavut (NU)	n/a	0.3	0.3	0.21

**greenhouse gas emissions (megatonnes of carbon dioxide equivalent)



* Canada's INDC Submission to the UNFCCC http://www4.unfccc.int/submissions/INDC/Submission%20Pages/submissions.aspx

Canada Emissions Profile



As seen in slide 6, the overall electricity supply mix in Canada is low ghg emitting. Canada will need a comprehensive plan to reduce GHG from other areas of the economy to fulfill its COP21 commitments.

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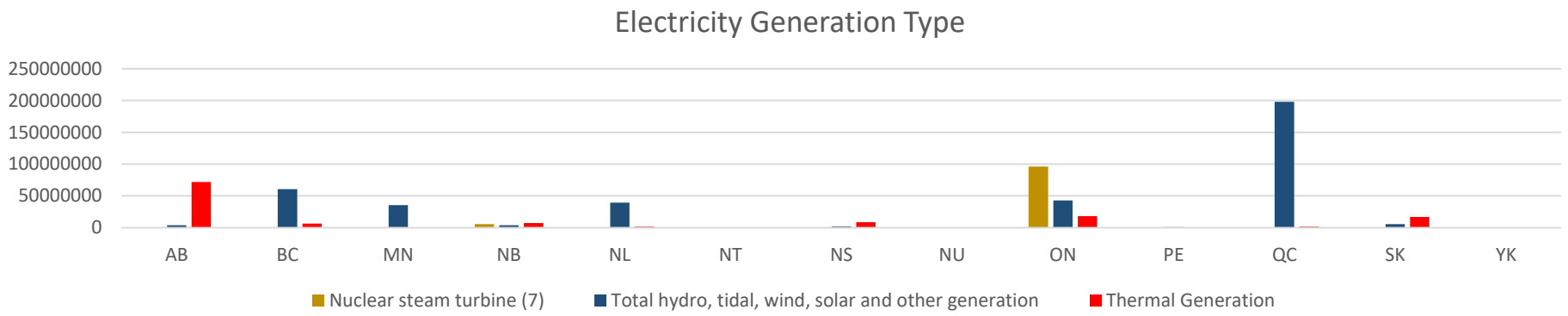
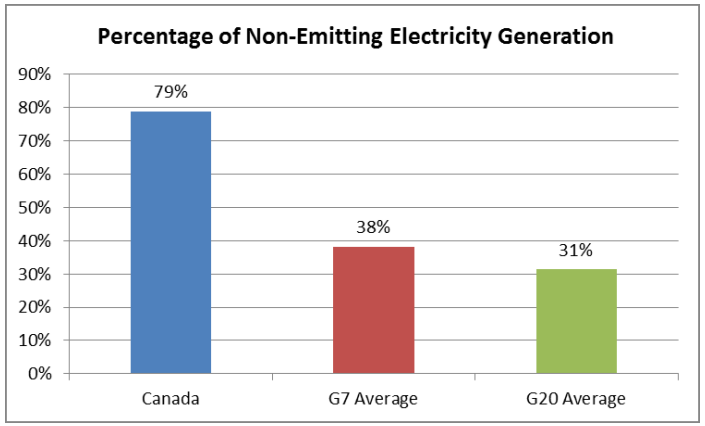
Canada Electricity Emissions Profile



Thermal Generation
A power plant in which the prime mover is a steam turbine. The steam used to drive the turbine is produced in a boiler where fossil fuels or other combustible materials are burned.
A power plant in which the prime mover is an internal combustion turbine. Electric power is generated by the rapid burning of a fuel-air mixture into mechanical energy.
A power plant in which the prime mover is a combustion turbine. Electric power is generated by the burning of a fuel into mechanical energy.

To reduce ghg emissions from electricity, thermal generation sources will need to be addressed. This applies to AB (Coal) and ON (Natural Gas) and SK. While SK, NB and NS also have thermal generation sources their overall contribution to GHG is very low.



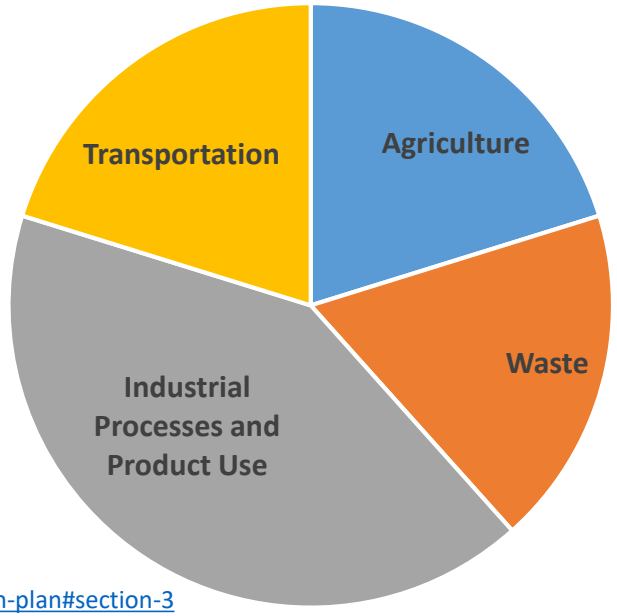
Statistics Canada. Table 127-0007 - Electric power generation, by class of electricity producer, annual (megawatt hour)

* Canada's INDC Submission to the UNFCCC
http://www4.unfccc.int/submissions/INDC/Submission%20Pages/submissions.aspx

Ontario GDP: 721 trillion 2014 approx

Baseline	1990 emissions
Target 2020	15 % lower
Target 2030	37% lower
Target 2050	80 % lower
Carbon Pricing Mechanism	Cap and Trade

Ontario GHG Emissions by sector

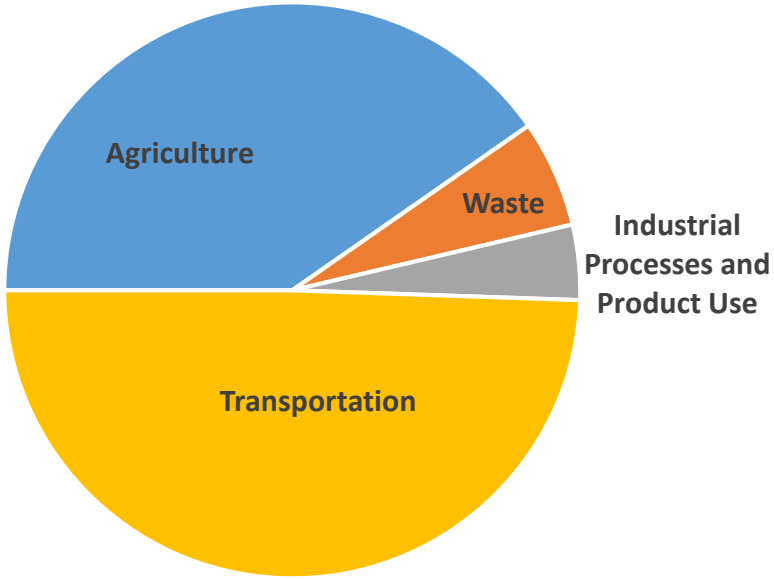


https://www.ontario.ca/page/climate-change-action-plan#section-3
http://publications.gc.ca/site/eng/368960/publication.html
National Inventory Report 2015

Manitoba 64 trillion 2014 approx

Baseline	2005 emissions
Target 2030	33% lower
Target 2050	50 % lower
Target 2080	Carbon Neutral;
Carbon Pricing Mechanism	Cap and Trade

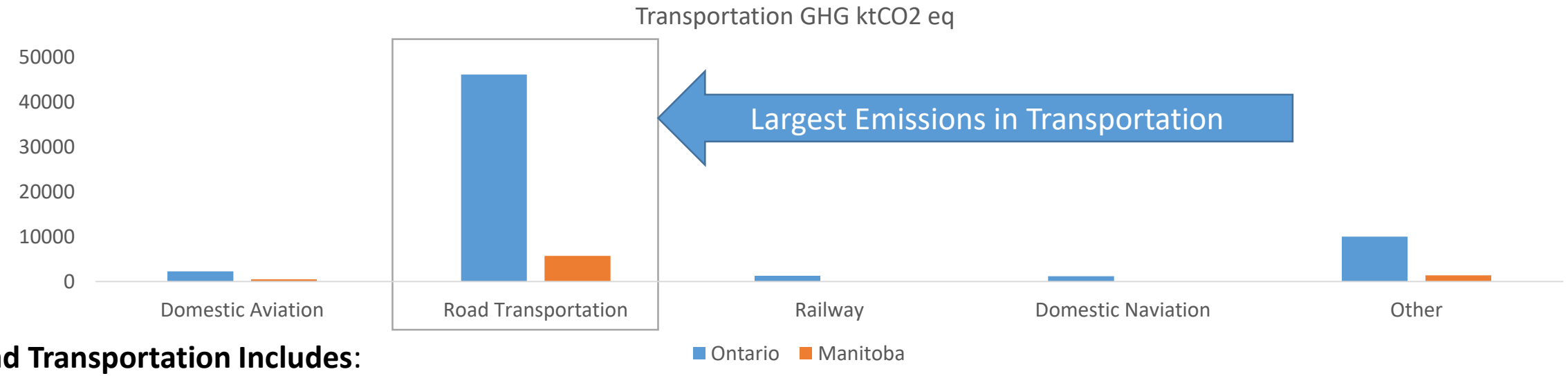
Manitoba GHG Emissions by sector



http://www.gov.mb.ca/conservation/climate/index.html Manitoba climate change and green economy plan, dec 2015

Transport

Ontario GDP: 721 trillion 2014 approx	Manitoba 64 trillion 2014 approx



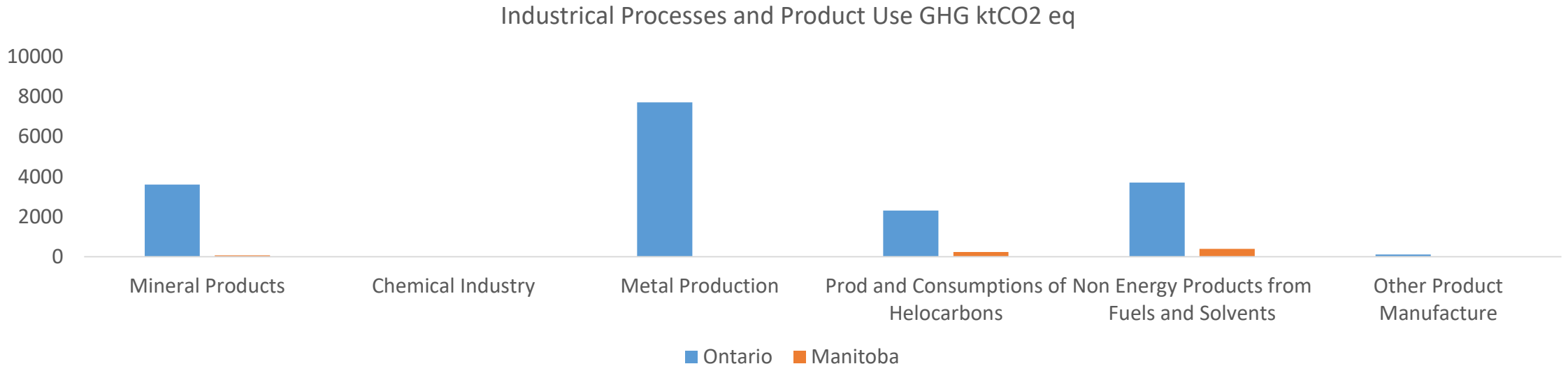
Road Transportation Includes:
Light-Duty Gasoline Vehicles
Light-Duty Gasoline Trucks
Heavy-Duty Gasoline Vehicles
Motorcycles
Light-Duty Diesel Vehicles
Light-Duty Diesel Trucks
Heavy-Duty Diesel Vehicles
Propane and Natural Gas

Key to note what both provinces are doing in Transportation, specifically in regards to road transportation vehicles

http://publications.gc.ca/site/eng/368960/publication.html
National Inventory Report 2015

Industrial Process and Product Use

Ontario GDP: 721 trillion 2014 approx	Manitoba 64 trillion 2014 approx

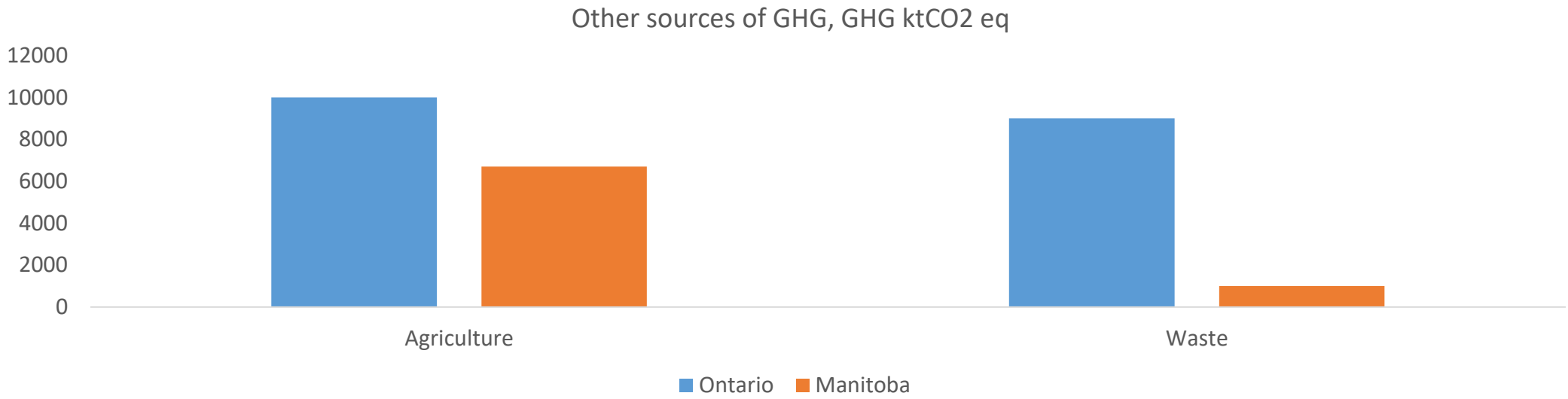


Manitoba has a much smaller economy than Ontario thus Ontarios plan for industrial sector GHG emissions will be more important for provincial GHG reductions than Manitobas

http://publications.gc.ca/site/eng/368960/publication.html
National Inventory Report 2015

Industrial Process and Product Use

Ontario GDP: 721 trillion 2014 approx	Manitoba 64 trillion 2014 approx



Focus on agricultural GHG emissions for Manitoba as it contributes to a larger part of the economy ghg emissions.

http://publications.gc.ca/site/eng/368960/publication.html
National Inventory Report 2015