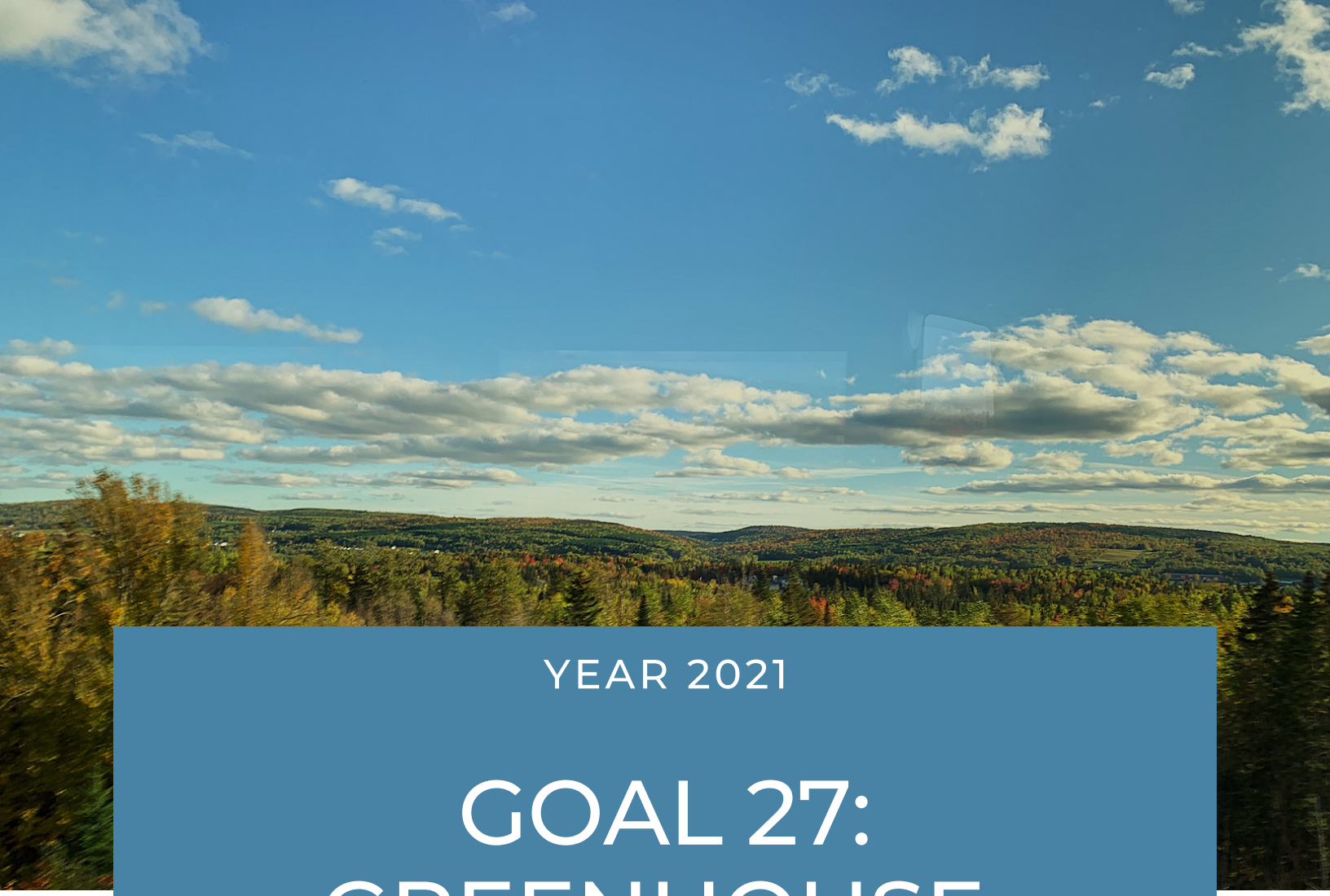


YEAR 2021

GOAL 27: GREENHOUSE GAS EMISSIONS

NEW BRUNSWICK WILL AIM TO REDUCE GREENHOUSE GAS EMISSIONS 46% BELOW 2005 LEVELS BY 2030 AND 75% BELOW 2005 LEVELS BY 2050.

STATUS: PROGRESSING

BoostNB.com

Overview

Importance

Emitting greenhouse gases (GHG) accelerates the rising global temperature. Once greenhouse gases are released into the atmosphere, they remain there for many years, trapping heat, and accelerating climate change. New Brunswick must both reduce emissions and has implemented over 100 action items to address and initiate a sustainable movement towards reducing emissions in their Transitioning to a Low-Carbon Economy plan [1]. Climate change poses a risk to the natural resources in NB, and therefore to the economy as well.

Problem

New Brunswick is already experiencing the implications of climate change, largely due to the amount of greenhouse gasses being emitted worldwide. New Brunswick produces a very small portion of global emissions - with Canada only representing about 1-2% - and can be seen as a national leader in emission reduction. Yet, despite major reductions, the province's annual temperature has risen by 1.1° Celsius over the past 30 years, showing the global scale of this issue. The Intergovernmental Panel on Climate Change expects a rise in temperature over 2° Celsius, which would have irreversible consequences. With rising temperatures comes rising sea levels, risks of flooding and erosion, and extreme weather events that do permanent damage.

Cause

New Brunswick relies on sectors that produce and emit greenhouse gases to stimulate economic growth. The refinery in New Brunswick is the largest in Canada and is a large contributor to the province's emissions. Transportation represents the largest portion of emissions in New Brunswick, at 29% in 2019. Yet, transportation has been necessary to connect rural and urban parts of the province. Electricity generation has been one of the largest emitters in the province until recently, and the coal-fired plants for electricity production such as the plant in Belledune are the main contributors to emissions from this sector.

[1] https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Climate-Climatiques/TransitioningToALowCarbonEconomy.pdf

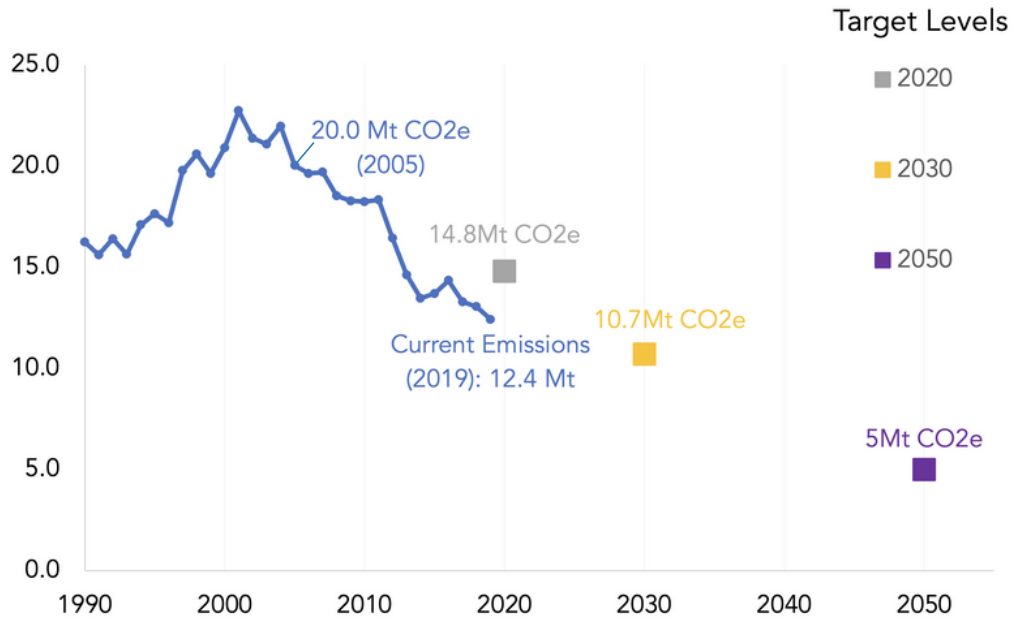
In the Numbers

New Brunswick's Emissions and Targets

As shown in Figure 1, New Brunswick's emissions peaked in the early 2000s; and in 2005, the year of the Paris Agreement, New Brunswick was emitting 20 Megatonnes of CO2 equivalent (Mt CO2e). Following the Paris Agreement, emissions in New Brunswick decreased to 12.4 Mt CO2e in 2019, a 38% reduction. New Brunswick aimed to reduce emissions below 14.8Mt CO2e in 2020 and has succeeded. Yet, it still needs to further reduce emissions below 2019 levels by 14% by 2030 and 60% by 2050 to achieve emission targets. Currently, New Brunswick is progressing on track to reduce its emissions and do its part in limiting climate change. The reduction in emissions since the early 2000s has come largely from reduced coal and oil consumption for electricity generation. New Brunswick plans to implement carbon taxes and clean technologies to become more energy efficient while encouraging sustainable economic development and creating jobs to reach these future targets.

New Brunswick increased its carbon pricing from $30 per tonne to $40 per tonne as of April 1, 2021 as per the federal backstop on carbon pricing. This increased gas prices by 2.21 cents per litre, while diesel increased by 2.68 cents per litre [2]. The province is required to have the federal set carbon price at $170 per tonne by 2030, which will further increase gas prices. This carbon pricing could promote emissions reductions while putting revenue generated from carbon pricing back in the economy in various ways, such as through revenue recycling.

Figure 1: New Brunswick's GHG Emissions and Targets

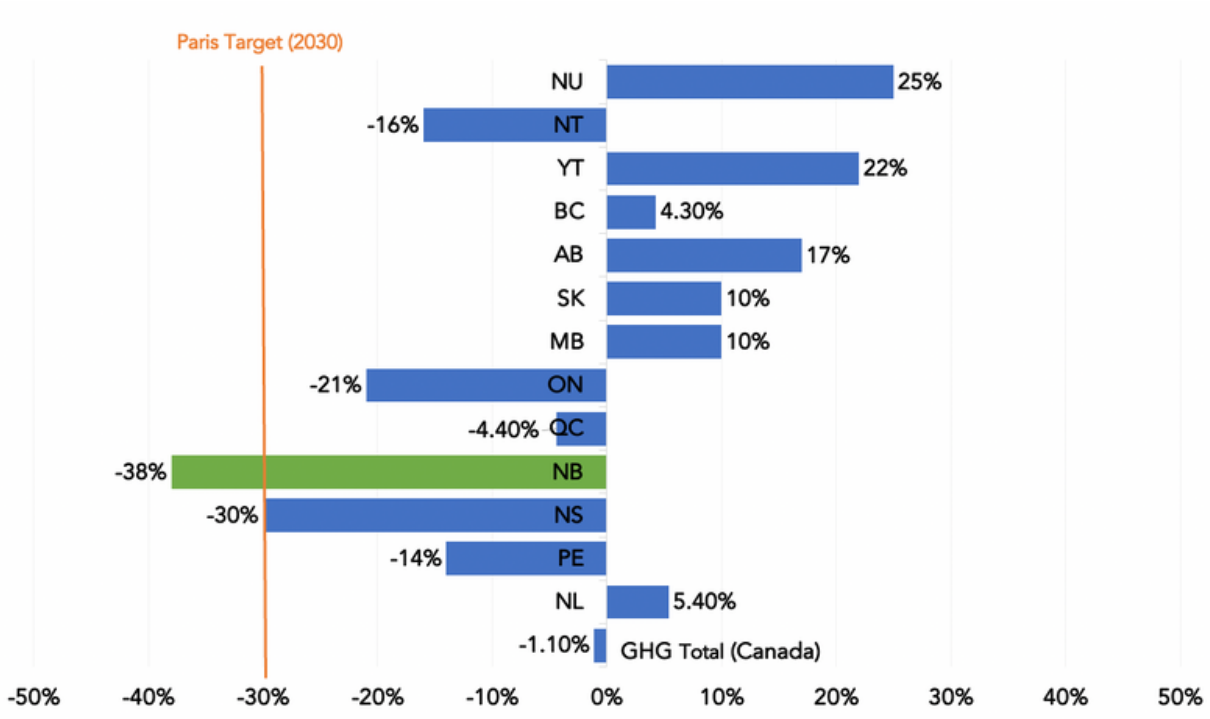


[2]. https://www2.gnb.ca/content/gnb/en/departments/finance/news/news_release.2021.03.0207.html

Emissions Reductions by Province and Territory since 2005

Based on the *2021 National Inventory Report* [3], Canada as a country plans to reduce its emissions by 32-40% of 2005 levels by 2030. This comes in alignment with the Paris Agreement, where Canada pledged to reduce emissions 30% below 2005 levels. In 2019, New Brunswick was the only province that had reduced its emissions enough to align with these targets, showing a 38% reduction since 2005. These reductions have come from specific actions such as shutting down coal-fired plants, converting to more renewable energy, and implementing more energy-efficient infrastructure.

Figure 2: GHG Emissions Reductions since 2005



(See full data set in Appendix B)

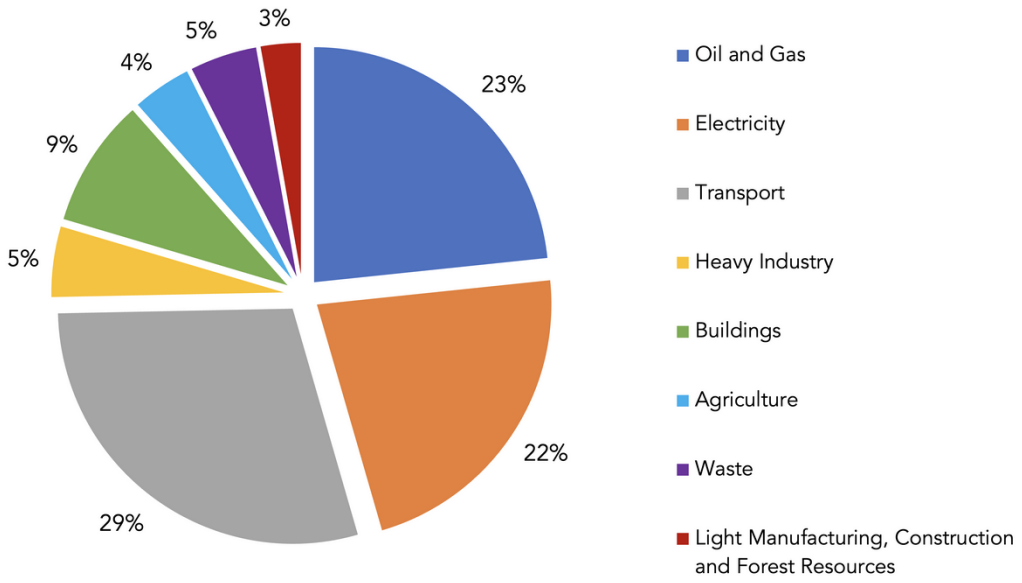
[3]. https://unfccc.int/documents/271493

A Closer Look

Figure 3 illustrates New Brunswick's largest contributors to GHG emissions in 2019. New Brunswick sees 29% of its emissions coming from transportation, with emissions from this sector totalling 3.6 Megatonnes CO2 equivalent (Mt CO2e). New Brunswick is in the process of improving its public transit accessibility and its green transportation policies. With a high proportion of the population coming from outside the cities, emissions reductions within this sector may come from urban reform, reduction of rural populations, and high-density cities. New Brunswick aims to increase the number of electric vehicles on the road while providing incentives to convert to electric cars and minimize the emissions coming from freight trucks.

New Brunswick's second-highest source of emissions of GHG is oil and gas, at 23%. New Brunswick is in the progress of reducing emissions in this sector by limiting the amount of oil and gas fuels used for public building heating. Electricity is the third-highest economic sector, emitting at 22%. The emissions coming from electricity have been significantly reduced since 2001, when they reached their highest point at 10.5Mt CO2e. Currently, 80% of NBPower's generation is coming from non-emitting sources, like the nuclear plant in Lepreau. Emissions from electricity come from coal-fired plants that are only used as peak demand and backup generation facilities. They do, however, employ a large amount of the population in the surrounding rural communities, so elimination of these plants would be felt.

Figure 3: GHG Emissions for New Brunswick by Canadian Economic Sector (2019)

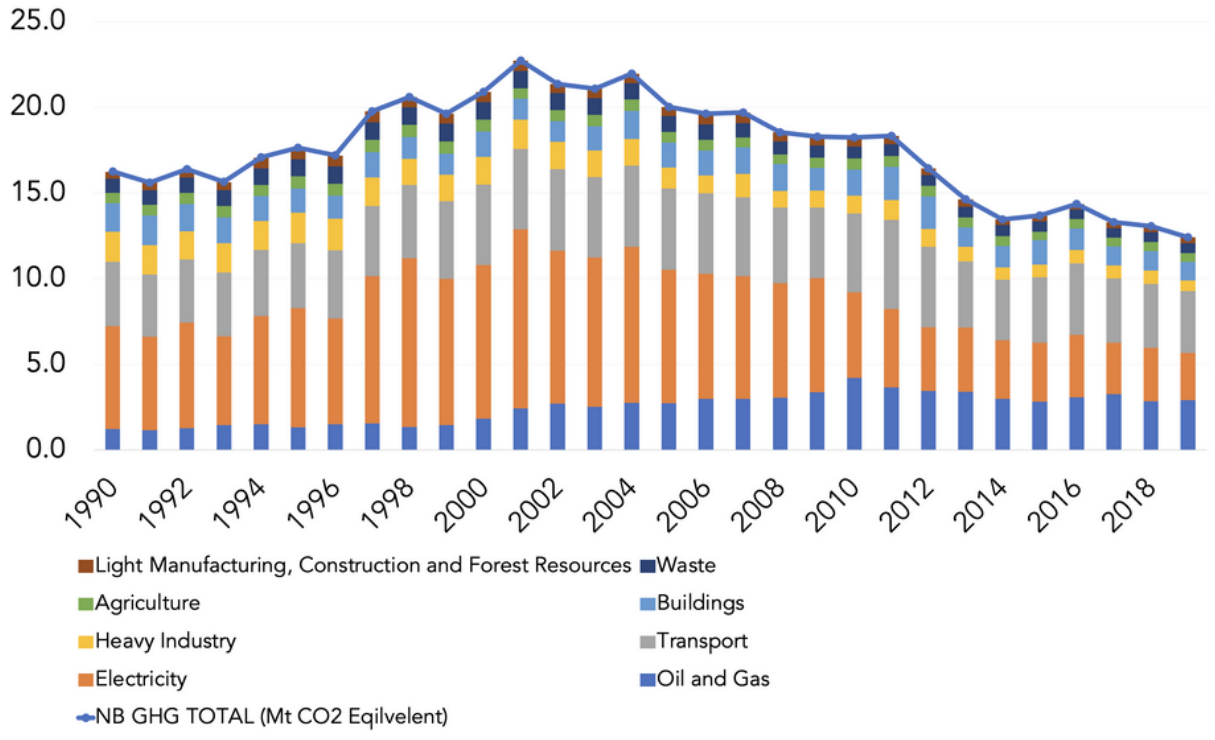


(See full data set in Appendix C)

As seen in the breakdown of New Brunswick's emissions since 1990 (Figure 4), the sectors emitting GHGs have shifted over time. Electricity used to be the largest contributor, producing 46% of emissions in 2001. New Brunswick has since seen a decreasing trend in emissions from electricity, from 10.5MtCO2e to 2.8MtCO2e. Meanwhile, emissions from the oil and gas sector have been increasing. Since 2001, New Brunswick's oil and gas emissions have grown from 2.4Mt CO2e to 2.9Mt CO2e. New Brunswick's 2019 report, *Holding Large Emitters Accountable*, outlines how NB is taking action on reducing emissions coming from large emitters in the industrial and electricity generation sectors, through carbon pricing [3].

Emissions from transportation have stayed fairly consistent since the early 1990s. Emissions from this sector are challenging to reduce, as transportation is necessary to connect urban and rural New Brunswick. As well, we are reliant on road/truck transportation due to the lack of rail infrastructure in the rest of the country. The main sectors - Transport, Oil and Gas, and Electricity - have room to continue reducing emissions to reach future targets.

Figure 4: GHG Emissions in New Brunswick by Sector Breakdown



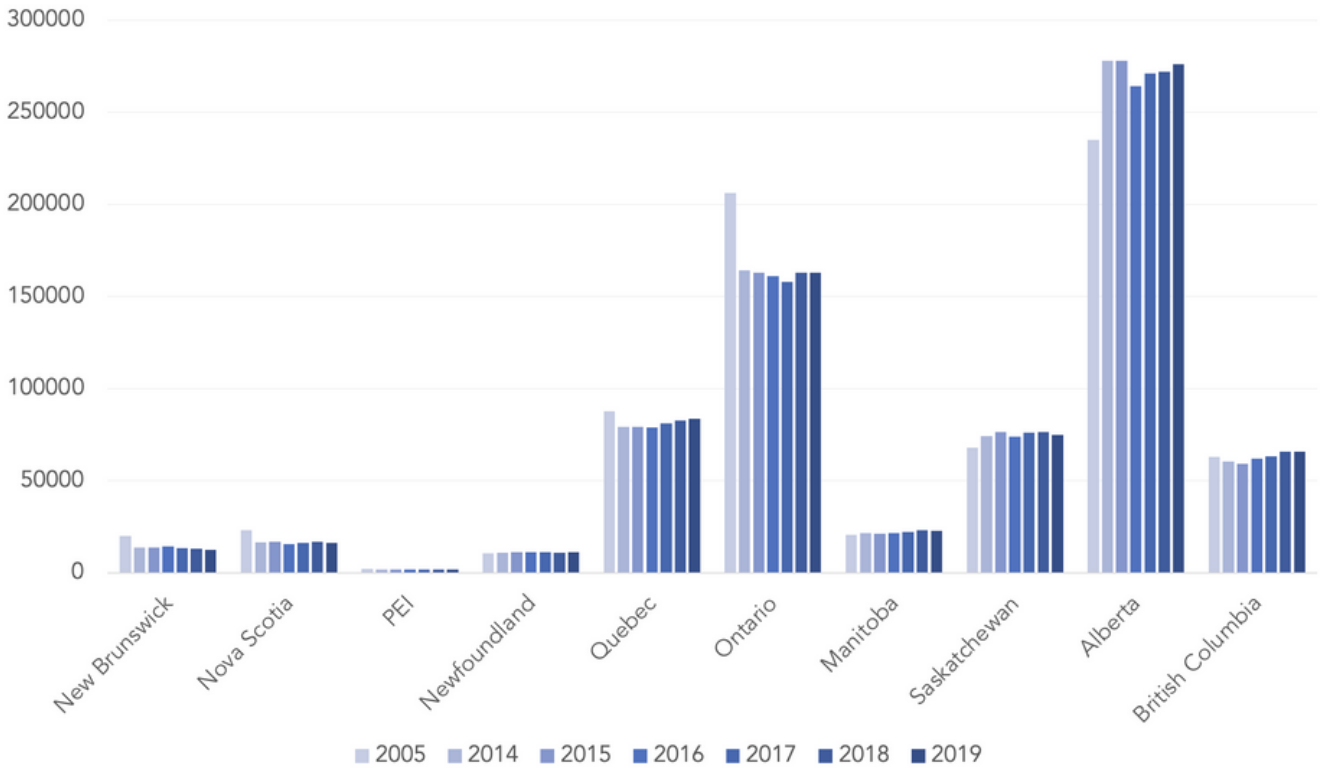
(See full data set in Appendix D)

[4]. https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Climate-Climatiques/HoldingLargeEmittersAccountable.pdf

GHG Emissions: Canadian Provinces (2019)

When looking at New Brunswick in comparison to the rest of Canada, New Brunswick is a leader in lowering GHGs emitted nationally. Alberta emits the most GHGs and has seen a large increase in emissions since 2005. The Atlantic region has seen a downward trend in emissions since 2005 and collectively produces only about 6% of Canada's emissions. Unfortunately, this is a global battle, and in order to limit the implications of climate change, all parties need to buy in to reducing emissions.

Figure 5: Canadian Provinces' GHG Emissions



(See full data set in Appendix E)

Summary

Greenhouse gas emissions in the province have been decreasing since the early 2000s. Through several province-wide actions, NB has been able to move away from and reduce emissions from various sectors. New Brunswick has succeeded in reducing and limiting its greenhouse gas emissions in alignment with Canada's reduction targets, as well as with the 2005 Paris Agreement.

Our province could face irreversible damages from climate change if the temperature continues to rise. Moving towards green technologies and lifestyles provides the opportunity for economic growth through job creation while encouraging both private and public investments.

Appendix A

New Brunswick's GHG Emissions and Targets

Year	NB GHG TOTAL (Mt CO2 Equivalent)
1990	16.3
1991	15.6
1992	16.4
1993	15.6
1994	17.1
1995	17.7
1996	17.2
1997	19.8
1998	20.6
1999	19.6
2000	20.9
2001	22.7
2002	21.4
2003	21.1
2004	22.0
2005	20.0
2006	19.6
2007	19.7
2008	18.5
2009	18.3
2010	18.2
2011	18.3
2012	16.4
2013	14.6
2014	13.5
2015	13.7
2016	14.4
2017	13.3
2018	13.1
2019	12.4
2020	14.8
2030	10.7
2050	5

Source: Canada. 2021 National Inventory Report (NIR)

Appendix B

GHG Emission Reductions Since 2005

Province and territory	2005	2014	2015	2016	2017	2018	2019		Change (%) 2005 to 2019
GHG Total (Canada)	739	723	723	707	716	728	730		-1.10%
NL	11	11	11	11	11	11	11	NL	5.40%
PE	2	1.7	1.7	1.7	1.7	1.7	1.8	PE	-14%
NS	23	17	17	16	16	17	16	NS	-30%
NB	20	13	14	14	13	13	12	NB	-38%
QC	88	79	79	79	81	83	84	QC	-4.40%
ON	206	164	163	161	158	163	163	ON	-21%
MB	21	21	21	21	22	23	23	MB	10%
SK	68	74	76	74	76	76	75	SK	10%
AB	235	278	278	264	271	272	276	AB	17%
BC	63	60	59	62	63	66	66	BC	4.30%
YT	0.57	0.5	0.53	0.53	0.56	0.64	0.69	YT	22%
NT	1.6	1.5	1.7	1.6	1.3	1.4	1.4	NT	-16%
NU	0.58	0.7	0.64	0.74	0.75	0.75	0.73	NU	25%
								Paris Target	**-30%**

Source: Canada. 2021 National Inventory Report (NIR)

Appendix C

GHG Emissions for New Brunswick by Canadian Economic Sector

Year	Oil and Gas	Electricity	Transport	Heavy Industry	Buildings	Agriculture	Waste	Light Manufacturing, Construction and Forest Resources	Coal Production
2019	2.9	2.8	3.6	0.6	1.1	0.5	0.6	0.3	-

Source: GHG Emissions for New Brunswick by Canadian Economic Sector, 1990-2019

Appendix D

GHG Emissions in New Brunswick with Sector Breakdown

Year	NB GHG TOTAL (Mt CO2 Eqilvelent)	Oil and Gas	Electricity	Transport	Heavy Industry	Buildings	Agriculture	Waste	Light Manufacturing, Construction and Forest Resources
1990	16.3	1.2	6.0	3.7	1.8	1.7	0.6	0.8	0.4
1991	15.6	1.2	5.4	3.6	1.7	1.7	0.6	0.9	0.4
1992	16.4	1.3	6.2	3.7	1.7	1.6	0.6	0.9	0.5
1993	15.6	1.5	5.2	3.7	1.7	1.5	0.7	0.9	0.5
1994	17.1	1.5	6.3	3.9	1.7	1.5	0.7	1.0	0.6
1995	17.7	1.3	7.0	3.8	1.8	1.4	0.7	1.0	0.7
1996	17.2	1.5	6.2	4.0	1.9	1.3	0.7	1.0	0.6
1997	19.8	1.5	8.6	4.1	1.7	1.5	0.7	1.0	0.7
1998	20.6	1.3	9.9	4.3	1.5	1.3	0.7	1.0	0.6
1999	19.6	1.4	8.5	4.5	1.6	1.2	0.7	1.0	0.6
2000	20.9	1.8	9.0	4.7	1.6	1.5	0.7	1.0	0.6
2001	22.7	2.4	10.5	4.7	1.7	1.2	0.6	1.0	0.6
2002	21.4	2.7	8.9	4.8	1.6	1.2	0.6	1.0	0.5
2003	21.1	2.5	8.7	4.7	1.6	1.4	0.7	1.0	0.6
2004	22.0	2.7	9.1	4.8	1.5	1.7	0.7	0.9	0.6
2005	20.0	2.7	7.8	4.7	1.2	1.4	0.6	0.9	0.5
2006	19.6	3.0	7.3	4.7	1.0	1.5	0.6	0.9	0.6
2007	19.7	3.0	7.2	4.6	1.4	1.6	0.6	0.8	0.6
2008	18.5	3.0	6.7	4.4	1.0	1.6	0.6	0.8	0.5
2009	18.3	3.4	6.7	4.1	1.0	1.3	0.6	0.7	0.5
2010	18.2	4.2	5.0	4.6	1.1	1.5	0.6	0.7	0.5
2011	18.3	3.7	4.6	5.2	1.1	1.9	0.6	0.7	0.5
2012	16.4	3.4	3.7	4.7	1.0	1.9	0.6	0.6	0.4
2013	14.6	3.4	3.8	3.9	0.9	1.1	0.6	0.6	0.4
2014	13.5	3.0	3.4	3.6	0.7	1.3	0.6	0.6	0.3
2015	13.7	2.8	3.4	3.8	0.7	1.4	0.5	0.6	0.3
2016	14.4	3.1	3.6	4.2	0.8	1.2	0.5	0.6	0.3
2017	13.3	3.3	3.0	3.8	0.8	1.1	0.5	0.6	0.3
2018	13.1	2.8	3.1	3.7	0.8	1.1	0.5	0.6	0.4
2019	12.4	2.9	2.8	3.6	0.6	1.1	0.5	0.6	0.3
2020	14.8								
2030	10.7								
2050	5								

Source: GHG Emissions for New Brunswick by Canadian Economic Sector, 1990-2019

Appendix E

Canadian Provinces' GHG Emissions (2019)

Year	New Brunswick	Nova Scotia	PEI	Newfoundland	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
2005	20000	23200	2040	10500	87600	206000	20600	67800	235000	63000
2014	13500	16600	1710	10900	79200	164000	21500	74200	278000	60400
2015	13700	16700	1660	11000	79100	163000	21200	76200	278000	59200
2016	14400	15600	1720	11200	79000	161000	21500	73800	264000	61800
2017	13300	16200	1740	11100	81200	158000	22200	76000	271000	63200
2018	13100	16800	1730	10900	82500	163000	23000	76200	272000	65600
2019	12400	16200	1760	11100	83700	163000	22600	74800	276000	65700

Source: Canada. 2021 National Inventory Report (NIR)