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T. Yee, J.D., B.A. Hon.

TELEPHONE

1.306.665.1915

EMAIL

info@environmentalsociety.ca

WEBSITE

www.environmentalsociety.ca

MAIL

PO Box 1372 Saskatoon SK S7K 3N9

OFFICE

220 20th Street West Saskatoon

November 4, 2021

Honourable Scott Moe, Premier of Saskatchewan
Premier's Office, Legislative Building
2405 Legislative Drive, Regina, SK, S4S 0B3
premier@gov.sk.ca

Honourable Warren Kaeding, Minister of Environment
Room 30, Legislative Building
2405 Legislative Drive, Regina, SK, S4S 0B3
env.minister@gov.sk.ca

Dear Premier Moe and Minister Kaeding,

As the COP 26 United Nations Climate Change Conference proceeds with its work to curb global greenhouse gas pollution levels, we are writing to urge your government to strengthen your plans for reducing greenhouse gas emissions here in Saskatchewan.

COP 26 is working to keep alive the prospect of limiting the rise in global average temperature to no more than 1.5 degrees Celsius above the temperature in the pre-industrial era. Failure to do so will have serious negative implications for the future of human civilization and hundreds of thousands of species on Earth.

For this reason, the Government of Canada has increased its emission reduction pledge to the United Nations and now aims to reduce Canada's greenhouse gas emissions 40% - 45% below 2005 emission levels, and to achieve this goal by 2030. The Government of Canada has also pledged that our country will achieve net zero greenhouse gas emissions by 2050. Most importantly, the Government of Canada has spelled out a wide range of planned federal policy measures to help meet its 2030 goal. However, many other policy levers for emission reduction lie within provincial jurisdiction. **We are very concerned that the Government of Saskatchewan has not yet announced a set of plans for deeper greenhouse gas emission cuts in our province.**

The Government of Canada will struggle to fully achieve Canada's emission reduction obligations over the next 9 years without the full co-operation of all provinces. In the case of Saskatchewan, provincial emissions are still well above 2005 levels. Saskatchewan's province-wide greenhouse gas emissions for our population size are also more than three times the Canadian average and approximately nine times the world average.

OUR EMISSION REDUCTION REQUEST

In 2018, your government signaled it would reduce Saskatchewan's annual greenhouse gas emissions by 12 million tonnes by 2030. At the time, Saskatchewan's emissions sat at 76.4 million tonnes per year carbon dioxide equivalent. Thus, the planned 12 million tonne emission cut by 2030, when fully implemented, will constitute a reduction of approximately 16% in annual



province-wide emissions. From our organization's assessment of your government's plan, *Prairie Resilience*, the reductions will largely be achieved by way of equivalency agreements with the federal government in three important areas: methane emission reduction in Saskatchewan's oil and gas sector (where significant progress is being made), emission reduction at SaskPower, and emission reductions through carbon price levies on Saskatchewan's large industrial emitters.

These measures and others in your *Prairie Resilience* climate change plan were a step forward, but they are insufficient in the face of the climate emergency the world faces, and today they fall far short of what is needed for Saskatchewan to do its 'fair share' in helping Canada meet its emission reduction obligations to the United Nations.

The Secretary General of the United Nations is asking each country, along with city, regional and corporate stakeholders to reduce greenhouse gas emissions by at least 45% by 2030 and to achieve net zero emissions by 2050. This is based on the best available science, and it is what is required to avoid the worst impacts of the climate change emergency. Failure by one country or one province to do their part, adds to the emission reduction burden of others, or leaves everyone in the world more exposed to the risks that come with climate breakdown. In addition to Canada, several other developed nations have already responded to the Secretary General's request. President Biden, for example, is targeting a reduction in U.S. emissions of at least 50% below 2005 levels by 2030. The European Union is going even further and has committed to cut emissions 55% below 1990 levels by 2030. As COP 26 host, Prime Minister Boris Johnson has committed the U.K. government to achieve a 68% reduction in greenhouse gas pollution below 1990 levels by 2030.

The above-mentioned pledges by the United States, the European Union and the United Kingdom illustrate the scale of commitment that is now required worldwide. **We therefore urge you to formulate, in co-operation with the Government of Canada, a set of policy measures that will ensure Saskatchewan's province-wide greenhouse gas emissions will be cut at least 40% below 2005 emission levels by 2030. Since our province's emissions are above 2005 levels at present, achieving this will require a 45% reduction in Saskatchewan's greenhouse gas emissions over the next 9 years.**

Since your government assumed office in November of 2007, Saskatchewan's manmade greenhouse gas emissions have exceeded one billion tonnes. That is the total greenhouse gas emissions (expressed as carbon dioxide equivalent) that have been released into Earth's atmosphere from human activity in Saskatchewan over the past 14 years. **Saskatchewan now has higher annual greenhouse gas emissions than northern European countries such as Finland, Sweden, and Norway, all with much larger populations. If Saskatchewan were a country, we would have the highest per capita greenhouse gas emissions in the world.** This level of greenhouse gas pollution has continued despite overwhelming scientific evidence that emissions at this scale are simply not unsustainable.

The long atmospheric lifetime of carbon dioxide and nitrous oxide means that a large portion of recent Saskatchewan emissions will remain as heat trapping gases in Earth's atmosphere for at least 100 years. At least 15% of the carbon dioxide released will still be present as a heat trapping gas in Earth's atmosphere 1,000 years from now.¹

In this letter, we put forward a set of new emission reduction policy measures we hope your government will consider implementing in Saskatchewan. Also included as part of this letter is a referenced appendix. It provides highlights of scientific evidence from the Intergovernmental Panel on Climate Change and the World Meteorological Organization indicating that deeper greenhouse gas emission cuts are urgently needed, and highlights some of the unprecedented severe weather events in 2021, in which climate change played a significant role. Among these were the heat extremes and severe drought conditions we faced in Saskatchewan and across western North America this summer.



RECOMMENDED POLICY CHANGES IN SASKATCHEWAN

For Saskatchewan to achieve a 45% reduction in current levels of greenhouse gas emissions by 2030, a wide range of new provincial policy measures will need to be introduced by your government. Here we offer twenty-five recommendations for your consideration, that if implemented in conjunction with the federal policy measures already announced, would allow your government to achieve this goal.

The Saskatchewan Environmental Society urges the Government of Saskatchewan to take the following steps:

Electricity Generation

1. Phase out all conventional coal-fired power stations in Saskatchewan and complete this phase out by no later than 2030. (Alberta will have phased out coal-fired power stations by 2023-2024.)
2. Reopen negotiations with Manitoba on hydro purchases, with the view to importing at least 1,000 megawatts of hydro from Manitoba to Saskatchewan to help facilitate the phase-out of coal-fired electricity generation in this province. The federal government has funding in place to encourage such measures. We recommend the Government of Saskatchewan request that the Government of Canada pay one-half the cost of the additional transmission capacity needed to facilitate these hydro purchases.
3. Stop building new natural gas-fired power stations in Saskatchewan. While natural gas-fired power stations have a lower carbon footprint than coal-fired power generation, their greenhouse gas emissions are still significant. U.S. President Joseph Biden is aiming for a carbon-neutral power grid in the United States by 2035. If we want to follow the U.S. lead, any further addition of natural gas-fired power stations in Saskatchewan risks these stations becoming a stranded asset.
4. Scale up investments in solar power to at least 500 megawatts by 2030. SaskPower should also increase investments in electricity efficiency and electricity conservation to reduce peak demand by 500 megawatts in the coming decade. In addition, SaskPower should continue to expand wind power in Saskatchewan, and invest heavily in energy storage technologies. It is time to plan for a renewable power future for our province.
5. Reestablish Saskatchewan's net metering program in its pre-2019 form and promote widespread adoption of solar power on urban rooftops and by Saskatchewan's farm community. This promotional campaign should be combined with regulations that require all new solar panels to be recyclable and to be sourced from manufacturers with a low carbon footprint. Solar installations operate with 1/17 of the lifecycle greenhouse gas emissions of a coal-fired generating station.ⁱⁱ

Transportation

6. As we make progress in moving to a much lower carbon footprint on our power grid, the environmental benefits of shifting to electric vehicles will become more pronounced. The Government of Saskatchewan should complement current federal policies, by establishing provincial incentives to purchase electric vehicles and ultra-fuel-efficient vehicles.
7. Work with the Government of Canada, municipalities, and private gas station owners to establish a comprehensive network of electric vehicle charging stations across Saskatchewan powered by solar energy.



8. Reduce speed limits on divided highways back to 100 kilometres per hour. This would be an important way of immediately reducing greenhouse gas emissions in the transport sector at no financial cost, while also improving safety.
9. Work with the Government of Canada and private sector wholesalers and retailers to increase commercial shipping by rail. The Government of Saskatchewan should ask Ottawa to take responsibility for investments needed to improve rail transport in Saskatchewan. Shipping goods by rail is at least three times more energy efficient than shipping them by truck.
10. Provide targeted funding to Saskatchewan's urban municipalities to support infrastructure investments that facilitate increased walking and cycling and enhance pedestrian safety.
11. Reestablish inter-city bus service in Saskatchewan.

Protected Areas

12. Increase the current provincial government goal for protected areas in Saskatchewan from 12% to 30% and work closely with the federal government, indigenous communities, and local communities in selecting areas for protection. Saskatchewan should ask Ottawa for significant funding to facilitate this work and to finance hundreds of permanent new jobs aimed at safeguarding Saskatchewan's natural areas.

Rural Initiatives

13. Promote the establishment of dozens of new tree plantations in Saskatchewan to enhance carbon sequestration.
14. Work with the federal government on joint federal-provincial incentives to sequester carbon in Saskatchewan, including restoration of wetlands, planting of shelterbelts, and protection of grasslands that remain in good condition. Moreover, there is an urgent need to stop the current destruction of wetlands in this province.
15. Conduct extension work with farmers across Saskatchewan to support the reduction and better application of fertilizers which emit nitrous oxide into the atmosphere. It is crucial that these nitrous oxide emissions be sharply reduced. We also urge the Government of Saskatchewan to work with the University of Saskatchewan on measures to reduce methane emissions released by cattle.ⁱⁱⁱ

Buildings

16. Adopt a higher energy efficiency code in Saskatchewan by 2024 and signal that all new homes and commercial buildings will need to be built to net-zero ready emission standards by 2028.
17. Launch major revisions to the training programs for carpenters and electricians at SaskPolytechnic, to ensure all new graduates are fully trained to build to a net zero energy efficiency standard, to install solar power systems, and to undertake deep energy efficient retrofits to existing buildings.
18. Invest in a series of net zero energy home demonstration projects across Saskatchewan to increase public awareness of the benefits of building to this level of energy efficiency, and to give Saskatchewan's construction industry increased experience with this building method.



19. Complement federal incentives for home energy efficient retrofits, by launching a SaskEnergy-led incentive program aimed at increasing the energy efficiency of most homes and commercial businesses in Saskatchewan over the coming decade.

Heavy Industry

20. Set much more stringent performance standards for greenhouse gas emission reduction in Saskatchewan's industrial sector. The Saskatchewan government's goal up until now has been to reduce industrial sector greenhouse gas emissions 10% by 2030. This objective, outlined in *Prairie Resilience*, lacks ambition, and should be tripled.

Oil and Gas Sector

21. Over the past two years, positive steps have been taken to reduce methane emissions in Saskatchewan's oil and gas sector. However, there is a need to go much further. Stricter regulations are needed at active oil and gas well sites with respect to continuously monitoring for methane leaks and repairing leaks as soon as weather permits. The venting of methane gas during oil extraction should be banned by 2024, except in circumstances where venting is necessary for safety reasons. Well over 20,000 inactive oil well sites in Saskatchewan still need to be remediated, some of which will be leaking methane. Regulations to require that remediation be done in a timely manner should be implemented.
22. Apply a provincial tax on methane emissions from Saskatchewan's oil and gas sector, over and above the federal carbon tax. Methane emissions have at least 80 times the global warming potential of carbon dioxide over a 20-year period, and it is urgent they be brought down as rapidly as possible.
23. Establish regulations which require consistent decreases every few years in the amount of gas that can be flared at oil extraction sites. North Dakota has adopted such regulations.
24. Drop your government's plans to expand oil production in Saskatchewan 25% by 2030. Both the International Energy Agency and the United Nations have clearly signaled that such plans, whether in Saskatchewan or in any other part of the world, are unsustainable and completely out of step with holding the rise in global average temperature to no more than 1.5 degrees Celsius above pre-industrial.

Collaboration With Regina and Saskatoon

25. Work closely with the City of Regina and the City of Saskatoon to help both cities achieve the ambitious greenhouse gas reduction goals and renewable energy goals they have set.

As all these measures are implemented, it is extremely important that the Government of Saskatchewan work with the federal government and with employers and trade unions to ensure a just transition for all workers impacted by the shifts to a low carbon economy.

Thank you for taking account of our concerns and for giving consideration to these 25 recommendations. We want to emphasize that every million tonnes of greenhouse gas emissions that can be avoided will make a difference to the future of human civilization. **Every one-tenth of a degree rise in global average temperature that can be prevented will make a positive difference to the next generation. We owe it to our children and grandchildren and all future generations to do everything we can over the next decade to address the climate emergency and to set the stage for achieving carbon neutrality by 2050.**



Yours sincerely,

A handwritten signature in dark ink that reads 'Peter Prebble'.

Peter Prebble, Board Member

A handwritten signature in dark ink that reads 'R.A. Halliday'.

R.A. Halliday, Vice President

A handwritten signature in dark ink that reads 'Margret Asmuss'.

Margret Asmuss, Board Member



APPENDICES

A. HIGHLIGHTS OF THE LATEST SCIENTIFIC ASSESSMENT BY THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE AND THE WORLD METEOROLOGICAL ORGANIZATION

In its most recent report published on August 9, 2021, the Intergovernmental Panel on Climate Change (IPCC) concluded it was unequivocal that human influence had warmed the atmosphere, ocean and land resulting in widespread and rapid changes to the atmosphere, ocean, cryosphere and biosphere.^{iv} Each of the past four decades has had a higher global average temperature than any decade that preceded it since 1850.^v **Carbon dioxide concentrations in the atmosphere are now higher than at any time in at least 2 million years, making them higher than human civilization has ever experienced. Concentrations of methane and nitrous oxide are higher than at any time in at least 800,000 years.**^{vi} There has been a worrisome 19% increase in radiative forcing (from greenhouse gas emissions) since 2011.^{vii} While all countries on Earth have played some role in contributing to this circumstance, approximately 80% of the added manmade burden has come from G-20 nations, since they account for approximately 80% of annual global emissions.^{viii}

The August 2021 IPCC report includes numerous examples of how climate change impacts are accelerating. For example, the rate of ice sheet loss increased by a factor of four between the period 1992–1999 and the period 2010–2019.^{ix} Almost all the world's glaciers are retreating synchronously.^x Marine heatwaves have approximately doubled in frequency since the 1980s, and human influence has very likely contributed to most of this change since at least 2006.^{xi} With respect to sea level rise, the average rate was 1.3 mm yr⁻¹ between 1901 and 1971, increasing to 1.9 mm yr⁻¹ between 1971 and 2006, and further increasing to 3.7 mm yr⁻¹ between 2006 and 2018.^{xii} This accelerated pace poses enormous risks to small island nations and the world's coastal communities.

IPCC warns that many changes due to past and future greenhouse gas emissions will be irreversible for centuries to millennia, particularly changes in the ocean, the ice sheets and global sea level.^{xiii} However, major greenhouse gas emission reductions in the decades ahead can help significantly reduce these negative impacts.

Of special concern to Saskatchewan should be the IPCC conclusion that human-induced climate change has contributed to increases in agricultural and ecological droughts in some regions of the world due to increased land evapotranspiration.^{xiv} IPCC notes that with every additional increment of global warming, changes in extremes continue to become larger. For example, every additional 0.5°C of global warming causes clearly discernible increases in the intensity and frequency of hot extremes, as well as agricultural and ecological droughts.^{xv}

The Intergovernmental Panel on Climate Change warns that climate change has increased the chance of compound extreme weather events since the 1950s. This includes increases in the frequency of concurrent heatwaves and droughts and fire weather in some regions of all inhabited continents.^{xvi} IPCC scientists warn that concurrent extremes will become more frequent for many crop-producing areas if global average temperature is allowed to rise 2°C above the pre-industrial era temperature, as compared to holding the rise to 1.5°C above pre-industrial (by way of deep greenhouse gas emission reductions). To date, global average temperature has risen 1.1°C above pre-industrial.

IPCC warned in earlier reports that to allow the global average temperature to rise to 2 degrees Celsius above the pre-industrial era instead of 1.5 degrees Celsius would have other enormous negative impacts. For example, hundreds of millions of additional people would be thrown into poverty due to impacts such as increased drought and increased water scarcity. At a rise of 2 degrees Celsius in global average temperature, virtually all the coral reef ecosystems on our planet would be lost.^{xvii}



We want to particularly draw your attention to the IPCC conclusions about the world's remaining carbon budget. IPCC scientists state that to have a 67% chance of holding global average temperature to 1.5 degrees Celsius, the aspirational goal of the Paris Agreement, human civilization can only release a total of another 400 billion tonnes of carbon dioxide into Earth's atmosphere.^{xviii} For context, Saskatchewan alone has released one billion tonnes of greenhouse gas emissions (carbon dioxide equivalent) into Earth's atmosphere in just the past 14 years.

The World Meteorological Organization (WMO) issued its latest *State of the Climate Report* on October 31, 2021 and flagged three long term trends we want to draw your attention to. **The WMO notes that the years 2015 to 2020 are the six hottest years globally since records have been kept.** 2021 is continuing the trend meaning it will likely be among the seven hottest years on record.^{xix} This is a direct result of higher greenhouse gas concentrations in the atmosphere. Moreover, as the oceans absorb more carbon dioxide from the atmosphere, open surface pH continues to decline. **Open surface pH of the oceans is now at its lowest level for at least 26,000 years, meaning our oceans are steadily becoming more acidic.**^{xx} This has major negative implications for all shell forming marine life. Third, **mass loss from North American glaciers has accelerated over the past twenty years, nearly doubling for the period 2015-2019 when compared to the period 2000-2004.**^{xxi} As a province that relies heavily on mountain glacier runoff during the summer months, this has significant implications for Saskatchewan's future.

B. CLIMATE CHANGE IMPACTS DURING THE SUMMER OF 2021

The summer of 2021 brought with it a series of unprecedented severe weather events that provide additional evidence as to the urgency for all governments across the globe, including the Saskatchewan government, to make much deeper greenhouse gas emission cuts a top priority. These events were too recent to be properly accounted for by the IPCC when it issued its August 2021 report.

The U.S. National Oceanic and Atmospheric Administration concluded that July 2021 was the hottest month ever recorded worldwide.^{xxii} The agency has been tracking global temperatures for 142 years. The National Oceanic and Atmospheric Administration also concluded that the meteorological summer of 2021 (June to August) was the hottest summer on record worldwide.^{xxiii} In North America the June to August period was the second hottest meteorological summer on record. This in turn reflected record high greenhouse gas concentrations in Earth's atmosphere, and it will have contributed to elevated summer temperatures in Saskatchewan and across western Canada.

One of the most dangerous events of the summer was the unprecedented heat wave that struck British Columbia in late June and early July of 2021. 526 people in B.C. died due to heat-related causes during the heat wave itself and many others suffered heat stress, overwhelming emergency health care services. There was also further loss of life in B.C. in subsequent weeks due to heat related illness. In all 595 people in B.C. died between June 18 and August 12, 2021, due to heat-related causes.^{xxiv} This late June heat wave is now the deadliest weather event in Canadian history.

The B.C. heat wave peaked on June 29th when the village of Lytton reached an exceptionally dangerous 49.6 degrees Celsius.^{xxv} This is a full 4.6 degrees Celsius hotter than Canada's previous high temperature mark of 45.0 degrees Celsius recorded in Yellowgrass, Saskatchewan on July 5, 1937. One day later, a large portion of the village of Lytton was destroyed as a wildfire swept through the community,

Climate change unquestionably made the B.C. heat significantly worse than it would normally have been. **Twenty-seven scientists in the World Weather Attribution Group studied the heatwave and concluded it was made 150 times more likely because of climate change.**^{xxvi} **This heat wave went on to have significant impacts in Alberta, Saskatchewan, and Manitoba too. While moderating somewhat as it moved eastwards, it exacerbated drought conditions in all three prairie provinces.** It also set the stage for very difficult forest fire seasons in Saskatchewan and Manitoba.



The atmospheric conditions that resulted in the second hottest meteorological summer on record in North America also influenced summer-time temperatures in Saskatchewan. In the June to August period of 2021 Saskatoon experienced 29 days over 30 degrees Celsius. Eleven of those days were 34 degrees Celsius or higher. Regina experienced 28 days over 30 degrees Celsius; 5 of those days were 34 degrees Celsius or higher.^{xxvii} The extreme heat combined with a lack of precipitation further worsened drought conditions. Crop yields dropped sharply, and pastures wilted across vast portions of southern Saskatchewan creating enormous stress for our farm community.

The pattern was the same across most of western North America. Not only did severe drought extend across most of western Canada, but by mid-summer drought extended over 90% of the western United States.^{xxviii} Compounding drought conditions was the fact that five states in the U.S.A. - California, Idaho, Nevada, Oregon and Utah - reported their hottest summer on record in 2021.

Across the Atlantic, much of the European continent was also struggling with exceptionally high temperatures. **A new provisional high-temperature record was set for Europe, as the town of Syracuse on the Italian island of Sicily reached 48.8 degrees Celsius.**^{xxix} Residents throughout the southern Mediterranean suffered under dangerous heatwaves, and unprecedented wildfires struck both Turkey and Greece. In Greece wildfires threatened the suburbs just north of Athens and thousands of people had to be evacuated from the island of Evia as wildfire devastated much of the island.^{xxx} Wildfires also exploded in parts of Spain and Italy. On August 1, 2021, firefighters in Italy needed to intervene in more than 800 wildfire flareups in a single day.^{xxxi}

The summer of 2021 also saw extensive wildfires break out in Siberia, including Yakutia, Russia's largest and coldest region, which sits atop permafrost. The region faced record high temperatures and drought. For the first time since records were kept, wildfire smoke reached the North Pole.^{xxxii}

The warming atmosphere now holds more water vapour and this often results in heavier rainfall events that endanger local residents. There was further evidence of this in 2021. For instance, in July, Germany, Belgium, Luxembourg, the Netherlands, and China faced unprecedented floods caused by heavy rainfall. There was extensive loss of life, loss of homes, and massive damage to roads, bridges and infrastructure. The equivalent of two months of rainfall fell in two days in parts of Germany, Belgium, Netherlands, and Luxembourg.^{xxxiii} In China, Zhengzhou, the capital of Hanan province, received 720 mm of rainfall in one week, exceeding its average rainfall for an entire year.^{xxxiv}

These are just a few examples of the mounting evidence that **the climate change emergency is upon us now at a scale that is unprecedented.**



REFERENCES

- i IPCC, 2013: *Climate Change 2013: The Physical Science Basis: Contribution of Working Group 1 to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, page 1106.
- ii "Emissions of selected electricity supply technologies (gCO₂eq/kwh) in *Climate Change 2014: Mitigation of Climate Change, Intergovernmental Panel on Climate Change*, page 1335 (Table A.111.1)
- iii As one example of a measure worth exploring and testing further, University of California researchers have had initial success reducing methane emissions from dairy cows and beef cattle by introducing small amounts of red seaweed into their diet. For further details refer to: 'Red seaweed (*Asparagopsis taxiformis*) supplementation reduces enteric methane by over 80 percent in beef steers', March 17, 2021, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247820>
- Also refer to: Can Seaweed Cut Methane Emissions on Dairy Farms? Expert Sees Dramatic Reduction When Cows Consume Seaweed Supplement, May 24, 2018, <https://www.ucdavis.edu/climate/news/can-seaweed-cut-methane-emissions-on-dairy-farms>
- iv IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf, Refer to A.1.
- v Ibid, Refer to A.1.2
- vi Ibid, Refer to A.2.1
- vii Ibid, Refer to A.4.1
- viii <https://www.theglobeandmail.com/world/article-the-whys-and-wherefores-of-the-g20-summit-in-italy/>
- ix IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf Refer to A.4.3.
- x Ibid, Refer to A.2.3
- xi Ibid, Refer to A.3.1
- xii Ibid, Refer to A.1.7
- xiii Ibid, Refer to B.5
- xiv Ibid, Refer to A.3.2
- xv Ibid, Refer to B.2.2
- xvi Ibid, Refer to A.3.5



^{xvii} *Global Warming of 1.5 Degrees Celsius*, Summary for Policy Makers, Intergovernmental Panel on Climate Change, October 6, 2018, Refer to SPM 9, 10 and 11.

^{xviii} IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.
https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf, page SPM38. Refer to Table SPM.2

^{xix} World Meteorological Organization, October 31, 2021, Press Release Number: 31102021, <https://public.wmo.int/en/media/press-release/state-of-climate-2021-extreme-events-and-major-impacts>

^{xx} Ibid.

^{xxi} Ibid.

^{xxii} <https://www.noaa.gov/news/its-official-july-2021-was-earths-hottest-month-on-record> (National Oceanic and Atmospheric Administration, August 13, 2021)

^{xxiii} <https://www.ncdc.noaa.gov/cag/global/time-series/globe/land/3/8/1880-2021>

^{xxiv} 595 people were killed by heat in B.C. this summer, new figures from coroner show, November 1, 2021, <https://www.cbc.ca/news/canada/british-columbia/bc-heat-dome-sudden-deaths-revised-2021-1.6232758>

^{xxv} <https://www.cbc.ca/news/canada/british-columbia/bc-alberta-heat-wave-heat-dome-temperature-records-1.6084203>

^{xxvi} <https://www.nature.com/articles/d41586-021-01869-0>, Climate change made North America's deadly heatwave 150 times more likely, July 8, 2021.

^{xxvii} Government of Canada, Daily Data Report for June, July and August 2021, for Saskatoon RCS, Regina RCS.

^{xxviii} The Western Drought Is Bad. Here's What You Should Know About It, August 14, 2021, <https://www.nytimes.com/article/drought-california-western-united-states.html> *New York Times*

<https://www.discovermagazine.com/environment/drought-in-the-western-united-states-sets-a-122-year-record>, July 22, 2021.

^{xxix} <https://www.newscientist.com/article/2286967-sicily-hits-48-8c-the-highest-temperature-ever-recorded-in-europe/>

^{xxx} Greece wildfires: Evia island residents forced to evacuate, British Broadcasting Corporation, August 9, 2021, <https://www.bbc.com/news/world-europe-58141336>

Wildfires rip through Greek forests, cut large island in half, Canadian Broadcasting Corporation, August 7, 2021, <https://www.cbc.ca/news/world/wildfires-greece-1.6133382>
<https://www.aljazeera.com/gallery/2021/8/4/thick-smoke-over-athens-as-suburbs-battle-wildfires>, August 4, 2021.



xxxi <https://www.theguardian.com/world/2021/aug/01/tourists-evacuated-from-pescara-as-italy-records-over-800-wildfires>

xxxii <https://www.theguardian.com/world/2021/aug/09/smoke-siberia-wildfires-reaches-north-pole-historic-first>

xxxiii <https://public.wmo.int/en/media/press-release/water-related-hazards-dominate-disasters-past-50-years>
World Meteorological Organization, July 23, 2021, press release.

xxxiv <https://public.wmo.int/en/media/press-release/water-related-hazards-dominate-disasters-past-50-years>
World Meteorological Organization, July 23, 2021.