JUDICIAL NOTICE OF CLIMATE CHANGE

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INTRODUCTION

Recent catastrophic weather events – such as the devastating Alberta floods in 2013 – provide tangible evidence of the detrimental impacts of climate change. The Intergovernmental Panel on Climate Change (IPCC), which was started in 1988 by the World Meteorological Organization and the United Nations Environment Programme, has concluded that global warming is unequivocally happening.[1] Furthermore, the IPCC has emphatically noted that anthropogenic greenhouse gas emissions (GHGs) are extremely likely to be the cause of global warming.

Despite these developments, there remains a good portion of the Canadian population that denies climate change is happening.[2] In the United States, Senator Jim Inhofe – Chair of Senate Environmental and Public Works Committee – is a high profile climate change denier and author of *The Greatest Hoax: How the Global Warming Conspiracy Threatens Your Future*. As an illustration of his disbelief in climate change, in early 2015, he tossed a snowball in the Senate as his evidence that global warming is a hoax.[3]

In this regard, how have the courts responded in light of the strong scientific consensus regarding climate change and a somewhat skeptical public? Climate change litigation is still fairly novel in Canada, the United States and abroad. Despite its nascent stage, several courts have been sufficiently satisfied with the state of climate change science to take judicial notice of climate change as a matter of fact.

WHAT IS JUDICIAL NOTICE?

Judicial notice is a procedural mechanism that "allows uncontroversial facts to be established without evidentiary proof".[4] This means that a judicially noticed fact is not subject to the usual processes for testing evidence such as sworn evidence and cross-examination. While judicial notice contributes to the efficiency of court processes by eliminating the formal requirements for submitting evidence, courts use it in a limited

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[1] Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2014: Synthesis Report: Summary for Policymakers* (edited by the Core Writing Team, Rajendra K Pachauri & Leo Meyer).

[2] According to Forum Research Inc, Toronto, Canada (19 July 2014), 13% of the Canadian population is comprised of climate change deniers.

[3] Senator James Inhofe, *The Greatest Hoax: How the Global Warming Conspiracy Threatens Your Future*, 1st ed (Washington, DC: WND Books, 2012). For the snowball incident see online: <http://www.washingtonpost.com/blogs/the-fix/wp/2015/02/26/jim-inhofes-snowball-has-disproven-climate-change-once-and-for-all/>. In our view, Senator Inhofe's action is evidence of his conflation of the concepts of weather and climate change.

[4] Elizabeth F Judge, *Curious Judge: Judicial Notice of Facts, Independent Judicial Research, and the Impact of the Internet*, SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, 2012) at 327, online: <http://papers.ssrn.com/abstract=2195327>.

manner due to concerns of fairness and accuracy.[5]

The Supreme Court of Canada has provided clear direction on the appropriate use of judicial notice in its decisions in *R v Find*[6] and *R v Spence*.[7] In *R v Find*, the Supreme Court of Canada stated that:[8]

> Judicial notice dispenses with the need for proof of facts that are clearly uncontroversial or beyond reasonable dispute. Facts judicially noticed are not proved by evidence under oath. Nor are they tested by cross-examination. Therefore, the threshold for judicial notice is strict: a court may properly take judicial notice of facts that are either: (1) so notorious or generally accepted as not to be the subject of debate among reasonable persons; or (2) capable of immediate and accurate demonstration by resort to readily accessible sources of indisputable accuracy.

The Supreme Court provided further elaboration on the appropriate use of judicial notice in *R v Spence*. It confirmed that use of judicial notice is only acceptable for facts that are notorious or generally accepted by reasonable persons; or capable of demonstration by referring to easily accessible sources of indisputable accuracy (otherwise referred to as the "Morgan criteria" by the Court).

With respect to whether a fact is notorious or generally accepted by reasonable persons, the Court established an informed reasonable person test. It stated:[9]

> I believe a court ought to ask itself whether such "fact" would be accepted by reasonable people who have taken the trouble to inform themselves on the topic as not being the subject of reasonable dispute for the particular purpose for which it is to be used, keeping in mind that the need for reliability and trustworthiness increases directly with the centrality of the "fact" to the disposition of the controversy.

Further, the Supreme Court indicated that the appropriate use of judicial notice depends upon whether a fact is adjudicative or non-adjudicative. The centrality of the fact to disposition of the matter is also relevant as to whether or not judicial notice is appropriate. As the Supreme Court explained:[10]

> No doubt there is a useful distinction between "adjudicative facts" (the where, when and why of what the accused is alleged to have done) and "social facts" and "legislative facts" which have relevance to the reasoning process and may involve broad considerations of policy: Paciocco and Stuesser, at p. 286. However, simply categorizing an issue as "social fact" or "legislative fact" does not license the court to put aside the need to examine the trustworthiness of the "facts" sought to be judicially noticed.

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[5] *Ibid*.
[6] *R v Find*, [2001] 1 SCR 863.
[7] *R v Spence*, [2005] 3 SCR 458.
[8] *Supra* note 6 at para 48.
[9] *Supra* note 7 at para 65.
[10] *Ibid* at paras 57-63.

> … the permissible scope of judicial notice should vary according to the nature of the issue under consideration. For example, more stringent proof may be called for of facts that are close to the center of the controversy between the parties (whether social, legislative or adjudicative) as distinguished from background facts at or near the periphery. To put it another way, the closer the fact approaches the dispositive issue, the more the court ought to insist on compliance with the stricter Morgan criteria.

The Supreme Court established that, with respect to judicial notice, the appropriate approach is to apply the Morgan criteria regardless of the type of fact sought to be judicially noticed. If the Morgan criteria are met, then the fact can be judicially noticed. If the Morgan criteria are not met and the fact is adjudicative, then the fact will not be judicially noticed. However, when dealing with social facts or legislative facts, the Morgan criteria may not necessarily be conclusive. The Supreme Court stated that "[o]utside the realm of adjudicative fact, the limits of judicial notice are inevitably somewhat elastic".[11] As the legislative or social fact approaches the central issue, the Morgan criteria have more weight in determining acceptability of judicial notice.

JUDICIAL NOTICE OF CLIMATE CHANGE

Despite strong scientific consensus, there remains public debate on the existence and cause of climate change. However, this debate is not taking place in the courts.[12] While there is still substantial public skepticism in some sectors of society, most courts (at least in the U.S.) have been sufficiently satisfied with the state of climate change science to take judicial notice of climate change as a matter of fact. Climate change debates in the courts are not centered on its existence or its cause but rather on its impacts.[13]

Brief Overview of Climate Change Litigation

An assessment of climate change litigation in the U.S. and internationally was conducted by the Columbia Law School's Sabin Center for Climate Change.[14] At the end of 2013, the amount of climate change litigation in the U.S. had far outpaced litigation elsewhere with 420 cases in the U.S. and only 173 in the rest of the world combined.[15] The majority of climate change litigation outside the U.S. has taken place in Australia, New Zealand,

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[11] *Ibid* at para 63.

[12] Michael Gerrard, "Court Rulings Accept Climate Science" (2013) 250:52 NYLJ.

[13] Michael A Zody, "Climate Science in the Courts: Scientific Consensus makes for a Strong Adversary" (2009) 13:1 American Bar Association Newsletter at 13.

[14] Meredith Wilensky, *Climate Change Litigation in the Courts: An Assessment of Non-U.S. Climate Litigation* (New York: Columbia Law School Sabin Center for Climate Change, 2015). See also David Markell & JB Ruhl, "An Empirical Assessment of Climate Change in the Courts: A New Jurisprudence or Business as Usual?" (2012) 64 Fla L Rev 15 and David Markell & JB Ruhl, "An Empirical Survey of Climate Change Litigation in the United States" (2010) 40 Environmental Law Reporter 10644.

[15] Wilensky, *supra* note 14.

the E.U., Spain and the U.K. According to Wilensky,[16]

> Climate change litigation across the world does not lend itself to one consistent narrative. Most litigation surrounding climate change has involved tactical suits aimed at specific projects or details regarding implementation of existing climate policies. Beyond that, jurisdictions vary widely in terms of the amount, nature, and relative success of climate change litigation.

In the U.S., Wilensky found that climate change litigation is used strategically in driving the course of climate change regulation. In other parts of the world, climate change litigation has been aimed at specific projects or at details regarding implementation of existing climate change policies.

The Canadian Experience

As can be seen in the foregoing, climate change litigation has not yet established a strong foothold in Canada. A review of the Columbia Law School's Sabin Center for Climate Change database indicates that there have been approximately 10 cases in Canada dealing with climate change matters. Despite the sparsity of climate change litigation in Canada, there have been instances where the courts have taken judicial notice of climate change science.

In *Citizens for Riverdale Hospital v Bridgepoint Health Services*,[17] the Divisional Court of the Ontario Superior Court considered an appeal from a decision of the Ontario Municipal Board which had reviewed and approved planning decisions made by the City of Toronto. One ground for appeal was that the Board erred in law when it determined that the plan and zoning by-law amendments conformed with objectives and policies regarding the environment and carbon dioxide (CO_2) emissions. Ultimately, the Court found no reason to doubt the correctness of the Board's decision in this regard.

In making its decision, the Court made the following statement:

> I do, however, agree that the issue of CO_2 emissions is an important environmental concern to all members of the public, and in particular, those persons who live in the nearby vicinity where the construction and demolition will take place.

The Court explicitly accepted that climate change is an important environmental issue. This means that, at least implicitly, the Court accepted that climate change science is sufficiently established as to accept the fact of climate change and the significance of CO_2 emissions as a matter of judicial notice.

The Federal Court made an even stronger statement in *Syncrude Canada Ltd v Attorney*

[16] *Ibid* at 41.

[17] *Citizens for Riverdale Hospital v Bridgepoint Health Services* (2007) CanLII 20070626 (Ont SC DC).

General of Canada.[18] In this case, a provision of the federal *Renewable Fuel Regulations* made pursuant to the *Canadian Environmental Protection Act, 1999* was subject to a constitutional challenge. This provision required that diesel fuel produced, imported or sold in Canada contain at least 2% renewable fuel. In its challenge, Syncrude argued that the dominant purpose of the impugned provision was to regulate non-renewable resources and promote the economic benefits of protecting the environment and to create a demand for biofuels in the Canadian marketplace. In essence, Syncrude argued that the provision was not a constitutionally sound use of the federal criminal law power as any prohibition of harm was merely ancillary.

The Federal Court upheld the constitutionality of the impugned provision. In response to Syncrude's assertion that the production and consumption of petroleum fuels are not dangerous and do not pose a risk to human health or safety, the Court stated:

> [paragraph 83] … there is a real evil and a reasonable apprehension of harm in this case. The evil of global climate change and the apprehension of harm resulting from the enabling of climate change through the combustion of fossil fuels has been widely discussed and debated by leaders on the international stage. Contrary to Syncrude's submission, this is a real, measured evil, and the harm has been well documented.

This decision reaffirms the view previously expressed by Canadian courts that protection of the environment is a valid criminal purpose. The Court clearly accepts that, as a matter of judicial notice, climate change is actually happening.

The U.S. Experience

By far, the bulk of climate change litigation worldwide has been generated in the U.S. American courts have taken judicial notice of several aspects of climate change science. This includes acknowledgment of the link between GHGs and climate change, the mechanism of climate change (i.e. the greenhouse effect) and the general impacts of climate change.

There are examples of judicial notice of climate change science by the American courts dating back to the 1990s. The *City of Los Angeles v National Highway Traffic Safety Administration Center for Auto Safety*[19] decision involved a challenge to the decision of the National Highway Traffic Safety Administration's refusal to prepare an environmental impact statement covering its Corporate Average Fuel Economy standards for model years 1987-1988 and 1989. Ultimately, the Court held that the challenge failed on its merits. However, in reaching this determination, the Court clearly stated that "[n]o

[18] *Syncrude Canada Ltd v Attorney General of Canada*, (2014) FC 776. It should be noted that commentary on this case is adopted from a blog postdated 1 October 2014 entitled "Facts, Reasons and Environmental Evils: Recent Canadian Environmental Law decisions" on the Environmental Law Centre's blog.

[19] *City of Los Angeles v National Highway Traffic Safety Administration Center for Auto Safety* (1990), 912 F. 2d 478 (US CA, District of Columbia Cir).

one disputes the causal link between carbon dioxide and global warming".[20]

A more recent decision – *Massachusetts v EPA*[21] – has become the leading climate change case in the U.S. In this case, a group of states petitioned for *certiorari* that the EPA had abdicated its responsibility under the *Clean Air Act* to regulate 4 greenhouse gases. The questions before the U.S. Supreme Court were whether the EPA had statutory authority to regulate GHGs from new motor vehicles and, if so, were the EPA's stated reasons for not doing so justified. It determined that, under the *Clean Air Act*, the EPA had the authority to regulate GHGs from new motor vehicles. Further, the Court concluded that the EPA failed to provide reasoned explanation for its refusal to regulate GHGs from new motor vehicles. In reaching its decision, the Supreme Court stated:[22]

> A well-documented rise in global temperatures has coincided with a significant increase in the concentration of carbon dioxide in the atmosphere. Respected scientists believe the two trends are related. For when carbon dioxide is released into the atmosphere, it acts like a ceiling of a greenhouse, trapping solar energy and retarding the escape of reflected heat. It is therefore a species – the most important species – of a "greenhouse gas".

Further, the Supreme Court found that the EPA did not dispute the causal connection between man-made GHGs and global warming. It also found that "[t]he harms associated with climate change are serious and well recognized".[23] The harms identified by the Court included retreat of mountain glaciers, reduction in snow cover, earlier spring melting and accelerated rate of rise of sea levels.

The aspects of climate change science judicially noticed in the *Massachusetts v EPA* decision were referenced by the U.S. Supreme Court in *American Electric Power v Connecticut*.[24] In this case, the plaintiffs filed nuisance actions against 5 major power companies, which were the largest greenhouse gas emitters in the U.S. The plaintiffs sought a cap on GHGs to be set for each power company. In this case, the Court held that the *Clean Air Act* and actions by the EPA pursuant to that act displaced any common law rights to seek abatement of GHGs from power plants.

In making its decision, the Supreme Court referred to its previous comments on climate change science in the *Massachusetts v EPA* decision.[25] In particular, the Court noted that GHGs cause the greenhouse effect and that GHGs have been elevated to unprecedented levels almost entirely by human activity. The Court also noted the impacts of climate change such as melting ice-caps, rising sea levels, hurricanes and floods.

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[20] *Supra* note 19 at para 76.
[21] *Massachusetts et al v Environmental Protection Agency et al*, (2007) 27 SCt 1438 (US Supreme Court).
[22] *Ibid* at 1446.
[23] *Ibid* at 1455.
[24] *American Electric Power, Inc v Connecticut et al*, (2011), 564 US No 10-174 9 US SCt).
[25] *Ibid* at 1-3.

Judicial notice of climate change science was also taken in *Green Mountain Chrysler v Crombie*.[26] In this case, a variety of motor vehicle manufacturers challenged Vermont's adoption of GHGs regulations for new motor vehicles. The Court upheld Vermont's plan to adopt such regulations. According to Haughey, the "*Massachusetts* case was vital in the *Green Mountain Chrysler* case because factual findings regarding the reality of global warming and the legitimacy of deeming [greenhouse gases] as pollutants under the [*Clean Air Act*] – the same under which Vermont's new regulations were developed – bolstered Vermont's defense in this case".[27]

Indeed, the Court refers to the statement in *Massachusetts v EPA* that the "harms associated with climate change are serious and well recognized" and include rise in sea levels, irreversible changes to ecosystems, reduced snowpack and increased spread of disease.[28] As stated by the Court:[29]

> In Massachusetts v. EPA, the Supreme Court recognized for the first time the phenomenon of global warming and its potentially catastrophic effects upon our environment. The Supreme Court described human-generated contributions to global warming, including carbon dioxide emissions from motor vehicles …

The decision in *Green Mountain Chrysler v Crombie* provides another example of American courts taking judicial notice of several aspects of climate change science including the causal link between human cause GHGs and climate change, and the significant environmental impacts of climate change.

More recently, a New York court took judicial notice of climatological records in *Wohl v City of New York*.[30] This case involved an action by homeowners to recover damages to their premises and personal property caused by flooding during a severe rainstorm and by backing-up of the public sewer during Hurricane Irene. In the course of its decision, the Court took judicial notice of climatological reports issued by the National Data Centre in New Jersey. The Court concluded, as a result of the facts accepted through judicial notice, that the city was subjected to an inordinate amount of rainfall and that the flooding was due to the rainfall rather than improper design, inspection or maintenance of the sewer system.

While not a case of judicial notice, the comments of a Massachusetts District Attorney in dealing with criminal charges against climate protesters who used a lobster boat to stop a

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[26] *Green Mountain Chrysler v Crombie* (2007), Case No 2:05-cv-302 (US Dis Ct Vermont).
[27] Addie Haughey, "Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie" (2007) 8:1 Sustainable Development Law & Policy 72 at 72.
[28] *Supra* note 26 at 98.
[29] *Ibid* at 238.
[30] *Wohl v City of New York*, (2014) NY Slip Op 51618 (SC).

coal shipment to a power station are noteworthy.[31] In 2014, Massachusetts District Attorney Samuel Sutter dropped criminal conspiracy charges against two climate activists. In so doing, he stated that climate change is "one of the gravest crises our planet has ever faced" and that "the political leadership on this issue has been sorely lacking."

The International Experience

While not as extensive as that in the U.S., there has been more experience with climate change litigation internationally than in Canada. In the international arena, climate change litigation has typically been aimed at challenging specific projects or at the implementation of existing climate change policies.[32] The following provides some examples of courts taking judicial notice of the fact of climate change in Australia and New Zealand.

In Australia, the Victorian Civil and Administrative Tribunal (VCAT) considered a challenge to a planning scheme amendment which facilitated the continued operation of a power station.[33] The decision to allow the amendment was challenged on the ground that the planning panel failed to consider the environmental effects of GHGs resulting from continued operation of the power plant. Ultimately, the VCAT found that the planning panel had made an error because it was required to allow and consider evidence relating to the issue of GHGs.

In determining that GHGs were relevant to the planning scheme amendment, the VCAT stated:[34]

> It is to be observed that a planning scheme may be made to further the objective of "maintaining ecological processes"; and, further, "to balance the present and future interests of all Victorians". These are broad words. Ecological processes include processes within the atmosphere of the earth, including its chemistry and temperature. Many would accept that, in present circumstances, the use of energy that results in the generation of some greenhouse gases is in the present interest of Victorians; but at what cost to the future interests of Victorians? Further the generation of greenhouse gases from a brown coal power station has the potential to give rise to "significant" environmental effects. Hence I think it follows that a planning scheme could contain a provision directed at reducing the emission of greenhouse gases from a coal burning power station – not only to maintain an ecological process, but to balance the present and future interests.

In making this statement, the VCAT accepted several aspects of climate change science as a matter of judicial notice. Firstly, the VCAT accepted the connection between GHGs and climate change. Secondly, the VCAT acknowledged climate change as a significant

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[31] See online: <http://www.bostonglobe.com/metro/2014/09/08/activists-drops-charges-case-blocked-coal-shipment-power-plant/sUpBpGxzxAz3E2Vr5RFQQM/story.html>.

[32] Wilensky, *supra* note 14.

[33] *Australian Conservation Foundation et al v Minister for Planning*, (2004) Victorian Civil and Administrative Tribunal.

[34] *Supra* note 33 at para 43.

environmental issue. Lastly, the VCAT recognized the long-term impact of GHGs on future generations.

Another example of judicial notice in the international arena can be found in a recent New Zealand immigration tribunal decision.[35] In this case, a Tuvalu family appealed a denial of New Zealand resident visas for its family members. The family argued that, if its family members were deported, they would be at risk of suffering the adverse impacts of climate change in Tuvalu. Tuvalu is an island nation experiencing the detrimental effects from sea level rise due to climate change. The Immigration and Protection Tribunal found exceptional circumstances of a humanitarian nature which justified allowing the family to remain in New Zealand. These circumstances included the presence of extended family in New Zealand, the family's integration into New Zealand society and the best interests of the children.

The Tribunal did not determine whether or not climate change provided a basis for granting resident visas in this case. However, the Tribunal stated:[36]

> As for the climate change issue relied on so heavily, while the Tribunal accepts that exposure to the impacts of natural disasters can, in general terms, be a humanitarian circumstance, nevertheless, the evidence in appeals such as this must establish not simply the existence of a matter of broad humanitarian concern, but that there are exceptional circumstances of a humanitarian nature such that it would be unjust or unduly harsh to deport the particular appellant from New Zealand.

This statement provides a clear example of a decision-maker accepting the relationship between climate change and natural disasters as a matter of judicial notice.

Perhaps the most significant decision in climate change liability, on an international scale, is the decision in *Urgenda Foundation v The State of the Netherlands (Ministry of Infrastructure and the Environment).*[37] In this case, the Hague District Court required the Dutch Government to take action to ensure that Dutch GHGs are at least 25% lower than 1990 levels by 2020.[38] In making its decision, the Court made considerable reference to

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[35] *Re: AC (Tuvalu)* (Immigration and Protection Tribunal New Zealand) [2014] Case 501370-371. See also the companion case, *Re: AD (Tuvalu)* (Immigration and Protection Tribunal New Zealand) [2014] Case 800517-520 which deals with the family's refugee claim.

[36] *Re: AC (Tuvalu)* (Immigration and Protection Tribunal New Zealand [2014] Cases 501370-371 at para 32.

[37] *Urgenda Foundation v The State of the Netherlands (Ministry of Infrastructure and the Environment)*, 2015, C/09/456689/HA ZA 13-1396, online: <http://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2015:7196&keyword=urgenda>. See also Brenda Heelan Powell, *Exciting Developments in Climate Change Action* (30 June 2015) Environmental Law Centre blog for a brief summary of this decision, online: <https://environmentallawcentre.wordpress.com/2015/06/30/exciting-developments-in-climate-change-action/>.

[38] *Urgenda Foundation v The State of the Netherlands (Ministry of Infrastructure and the Environment)*, *ibid*.

the climate change science that the IPCC released and found that:[39]

> … the possibility of damages for those whose interests Urgenda represent, including current and future generations of Dutch nationals, is so great and concrete that given its duty of care, the State must make an adequate contribution, greater than its current contribution, to prevent hazardous climate change.

The Court concluded that, as a matter of legal protection and in accordance with its duty of care, the Dutch Government must do more to avert the imminent danger caused by climate change.

It should be noted that a very similar action has just commenced in the United States wherein the applicants are suing the government for violation of the public trust for failing to take steps to reduce, and in fact contributing to, the impacts of climate change.[40] This action aligns with other recent U.S. climate change decisions based upon the notion of public trust.[41]

LOOKING AHEAD

Although climate change litigation is in its infancy in Canada,[42] there are already examples of Canadian courts taking judicial notice of climate change science. Further, as novel climate change litigation gains momentum, the judiciary's treatment of climate change science is becoming increasingly important.

The purpose for which climate change science is adduced will dictate the willingness of courts to accept it as a matter of judicial notice. Climate change science introduced for non-adjudicative purposes, such as in social or legislative contexts, is likely to receive judicial notice. However, climate change science introduced for adjudicative purposes, such as the demonstration of actual harm, is likely to be subject to traditional evidential requirements.

Where climate change science is subject to traditional evidential requirements, the Courts must proceed with some measure of reasonable flexibility. As stated by McLeod-

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[39] *Ibid* at para 4.89.

[40] *Juliana ex rel Loznak v United States of America*, see Complaint for Declaratory and Injunctive Relief filed 12 August 2015, online: <http://ourchildrenstrust.org/sites/default/files/15.08.12YouthComplaint AgainstUS.pdf>.

[41] See a discussion of these U.S. cases, along with the *Urgenda Foundation* decision, in Jessica Wentz, *Failure to Take Climate Action if Not Only Morally Wrong, It's Illegal* (30 November 2015), Climate Change Blog, Sabin Center for Climate Change Law.

[42] For discussion of challenges associated with climate change litigation in Canada, see *Climate Change Litigation* by the University of Victoria, Environmental Law Centre, online: <http://www.elc.uvic.ca/associates/documents/Climate-Change-Dec3.07.pdf>. Challenges include forum issues, duty of care, causation and apportionment of liability.

Kilmurray:[43]

> Scientific expertise and uncertainty should not be an excuse for courts to abdicate their legal duties, and should not be used as tools to hide policy preferences or to deny justice to those most seriously affected by environmental harm.

Consequently, while judicial notice of climate change science may not be appropriate in all circumstances, the courts should remain alert to the fact that significant scientific consensus on the existence, mechanisms and impacts of climate change is already reasonably established.

[43] Heather McLeod-Kilmurray, "Placing and Displacing Science: Science and the Gates of Judicial Power in Environmental Cases" (2009) 6:1 & 2 UOLTJ 25 at para 82.