



# Indigenous environmental justice and sustainability

Deborah McGregor<sup>1</sup>, Steven Whitaker<sup>2</sup> and Mahisha Sritharan<sup>2</sup>

A distinct formulation of Indigenous environmental justice (IEJ) is required in order to address the challenges of the ecological crisis as well the various forms of violence and injustices experienced specifically by Indigenous peoples. A distinct IEJ formulation must ground its foundations in Indigenous philosophies, ontologies, and epistemologies in order to reflect Indigenous conceptions of what constitutes justice. This approach calls into question the legitimacy and applicability of global and nationstate political and legal mechanisms, as these same states and international governing bodies continue to fail Indigenous peoples around the world. Not only do current global, national and local systems of governance and law fail Indigenous peoples, they fail all life. Indigenous peoples over the decades have presented a distinct diagnosis of the planetary ecological crisis evidenced in the observations shared as part of Indigenous environmental declarations.

## Addresses

<sup>1</sup> Canada Research Chair, Indigenous Environmental Justice, York University

<sup>2</sup> Research Associate, York University

Corresponding author: McGregor, Deborah  
([dmcgregor@osgoode.yorku.ca](mailto:dmcgregor@osgoode.yorku.ca))

Current Opinion in Environmental Sustainability 2020, 43:35–40

This review comes from a themed issue on **Indigenous conceptualizations of ‘sustainability’**

Edited by **Pirjo Kristiina Virtanen, Laura Siragusa and Hanna Guttorm**

For a complete overview see the [Issue](#) and the [Editorial](#)

Available online 19th March 2020

Received: 06 December 2019; Accepted: 31 January 2020

<https://doi.org/10.1016/j.cosust.2020.01.007>

1877-3435/© 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

A distinct formulation of Indigenous environmental justice (IEJ) is required in order to address the challenges of the ecological crisis as well the various forms of violence and injustices experienced specifically by Indigenous peoples. This must be grounded in Indigenous philosophies, ontologies, and epistemologies in order to reflect Indigenous conceptions of what constitutes justice [1–5,6<sup>•</sup>,7<sup>•</sup>]. In contrast to dominant Western society’s tendency to view the natural world as a commodity, property or a ‘resource’, Indigenous understandings are based on regarding the Earth as alive and imbued with spirit. In this view, a reciprocal set of duties and

responsibilities between humans and the rest of the natural world exists such that, assuming these obligations are consistently met, relations between human and non-human entities are maintained in a healthy balance [8<sup>•</sup>,9<sup>•</sup>,10].

This approach calls into question the legitimacy and applicability of global and nation-state political and legal mechanisms, as these same states and international governing bodies continue to fail Indigenous peoples around the world [11<sup>•</sup>,12]. Indigenous peoples’ assessments of the world climate and environmental crisis, based on their own knowledge and understanding, have found global approaches thus far to be lacking [13,14<sup>•</sup>]. Not only do current global, national and local governance and legal systems fail Indigenous peoples, they fail all life [15]. Indigenous peoples over the decades have presented a distinct diagnosis of the planetary ecological crisis evidenced in the observations shared as part of numerous Indigenous environmental declarations since the Earth Summit in 1992 (including the following: *Kari-Oca Declaration*, *Kimberley Declaration*, *Indigenous Peoples Kyoto Water Declaration*, *Mandaluyong Declaration*, *Manaus Declaration*, *Kari-Oca 2 Declaration*, *Rio+20 International Conference of Indigenous Peoples on Self-Determination and Sustainable Development*, *Lima Declaration*) [16–23]. Increasingly, scientists from around the world have presented evidence that concurs with Indigenous peoples’ analyses: the health of the planet is indeed failing [24].

## The problem

Anthropocentric-induced climate change has been identified as the ‘defining issue of our time’ by many of the world’s leading experts [25–27]. Given the severity and speed of the alterations in global climate, many are now preferring to use the term ‘Climate Crisis’, to stress the urgency with which we must act to achieve a sustainable future [28]. The Intergovernmental Panel on Climate Change states that world CO<sub>2</sub> emissions must be slashed to about half of 2010 levels, *in the next ten years*, and reach net-zero by 2050 [25]. The IPCC has further stated that limiting global warming to 1.5 °C would require rapid, far-reaching and unprecedented changes in all aspects of society [25]. Currently, we are we are nowhere near making that happen. In fact, annual CO<sub>2</sub> emissions continue to *rise*, by as much as 2.7% in 2018 [29].

And that is just climate change. The United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), released its global assessment report on biodiversity and ecosystem services in May 2019 and the findings are equally troubling. Particularly shocking is the conclusion that, “. . . around

1 million species already face extinction, many within decades . . . ” unless radical changes are achieved in the immediate future [24]. The IPBES further iterates that, “Goals for . . . achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through *transformative* changes across economic, social, political and technological factors” (IPBES 2019, 6, italics mine) [24]. The United Nations World Water Development Reports (2014–2019) [30–35] all reveal serious challenges ahead, globally, regionally and locally, in relation to climate change impacts on water security. By 2030, the world is projected to face a 40% global water deficit under the business-as-usual (BAU) scenario [31] and it is expected that climate change will exacerbate these conditions. In the absence of genuine efforts at supporting a sustainable future, the planet and its inhabitants (all life) is now in a multiple ecological, economic, and climatic crisis, including a crisis of values. The continued deterioration of the planet’s health clearly demonstrates that current efforts at sustainability are inadequate.

### Indigenous environmental justice: beyond the human dimension

Many, if not all, Indigenous peoples across the globe already have their own intellectual and legal traditions to draw upon to generate a self-determined future that involves living well with the Earth [3,4,10,36\*,37\*\*]. Yet global economic systems and their ‘false solutions’ aggressively undermine Indigenous peoples, in particular Indigenous women, in systemic, ongoing, and violent ways [38,39\*]. It is therefore simply not rational for Indigenous peoples to rely on these global, national, and regional economic and political frameworks for climate justice and a sustainable future.

IEJ offers a distinct framework and set of logics that recognizes the agency of non-human beings as well as the Earth itself [40\*,41]. For example, in the water justice literature, based on a Indigenous ontologies, water is understood to be a living entity with duties and obligations to ensure the well being of life, which is in direct contrast to water as a resource/property and commodity [7\*,40\*,41]. Water justice and security are not just about what people can access equitably, as reflected in the United Nations right to-water discourse, but justice for water as a living entity with rights and responsibilities of its own [8\*\*].

IEJ is thus relevant beyond the human dimension, and it may well be that humanity alone does not possess the solutions required to save us from ourselves [42\*]. Indigenous peoples assert that a just path to a sustainable future must consider *all relations*, an approach best expressed through Indigenous knowledge systems, legal orders, governance and conceptions of justice. These systems offer a diagnosis and path forward that answers

the call for the ‘transformative change’ needed to alter global society’s current trajectory. Indigenous knowledge can play a key role in such transformation and has been recognized as such for decades [1,43–47,48\*].

### IEJ and colonialism

International bodies including the United Nations have of course been seeking to address the ecological crisis. Yet resultant mitigation strategies (e.g., the ‘green economy’, REDD+, and the ‘natural capital’ approach) have been labeled by Indigenous peoples as ‘false solutions’ that have done little to alter the current course, as evident in the Indigenous declarations mentioned earlier. Alternate approaches are required. Indigenous conceptions of justice will enrich the theoretical grounding and practice of environmental justice through the inclusion of Indigenous legal orders, knowledges, principles and values.

Indigenous nations have engaged in their own diagnoses of the core issues and put forward their own solutions, as exemplified by Indigenous environmental or climate change declarations at international, national and local levels [49]. Such declarations offer anti-colonial critiques and insights as to the underlying sources of the global climate/ecological crisis. In the North American context, Indigenous peoples have arguably been concerned over ecosystem destruction since the arrival of Europeans over five centuries ago, long before dominant society officially recognized it as a crisis [10,50\*\*]. From an Indigenous point of view, environmental injustices, including the climate crisis, are therefore inevitably tied to, and symptomatic of, ongoing processes of colonialism, dispossession, capitalism, imperialism/globalization and patriarchy.

Indigenous scholars confirm that we need to understand the current ecological crisis as an ‘intensification of colonialism’, and thus decolonization is required if any viable and sustainable path forward is to be envisioned [10,51,52]. Colonialism is generally understood to be one group/society assuming control of another society’s territories and imposing its own systems of laws and governance. According to Kyle Whyte, settler colonialism is a form of colonization in which the colonizer decides to ‘settle’ in the other society’s homeland and settlers seek to “erase Indigenous economies, cultures, and political organizations for the sake of establishing their own” [10]. Whyte continues that, in settler colonialism, a process that has occurred widely throughout the world, “the settlers’ aspirations are to transform Indigenous homelands into settler homelands” [10]. Whyte further provides a settler colonialism analysis of the Dakota Access Pipeline environmental justice issue, which he sees as a highly disruptive type of injustice both embedded in history and confirmed through the existing laws, policies and governance processes of the colonizing state. Settler colonialism as an Indigenous environmental justice frame reveals that indeed it is no accident Indigenous

peoples are disproportionality impacted by environmental degradation as compared to other marginalized groups [6\*\*,53,54]. Such a colonialism forms part of larger processes that prop up unsustainable and highly destructive agendas. Applying a settler colonial and environmental injustice analysis reveals deep-rooted historical forces at work in every facet of injustices experienced by Indigenous peoples [2,51,55–57]. Failure to apply an analysis of historical and on-going colonialism to understand the depth and scope of environmental injustices that are affecting Indigenous communities means remedies will continue to fail [10,58,59\*,60]. The IPCC and IPBES reports, along with other assessments of planetary health, as useful as they are in calling for transformative change, have thus far fallen prey to this failure to fully consider the historical and ongoing colonialism context [10,50\*\*,58,59\*]. As cultures who *do* fully understand the colonial context, having suffered centuries of direct impact from it, and who have for millennia practiced alternative approaches to living well with the earth, Indigenous peoples can help global society to see what the needed ‘transformative’ changes might look like.

An Indigenous environmental justice frame also provides a counter-narrative to the view that the experience of Indigenous peoples is that of simply ‘victims’ — the negatively impacted vulnerable population — common in international fora and scholarship. Scholarship such as Kyle Whyte’s [10] challenges such a discourse, asserting that while indeed Indigenous peoples are vulnerable to such a large-scale disruption, they also possess experiences derived in part from their survival of historical and on-going imperialism, capitalism, and colonialism that have equipped them with knowledge of how to survive catastrophic environmental change. Indigenous peoples have adapted to and survived through such a change for centuries, and have utilized their own knowledge and legal orders to do so [10,61–63]. These long standing, unique and distinct dimensions of Indigenous peoples’ experiences have thus far had limited impact on environmental, sustainability, and climate change policy internationally or nationally. Such an exclusion of the holistic experience and contributions of Indigenous can be considered another form of environmental injustice.

### IEJ and well-being

Indigenous peoples have identified Indigenous knowledge and legal systems as central to supporting and enabling adaptive capacity, resilience and sustainability in the face of the climate crisis [12,64]. Much of the existing IEJ scholarship has pointed to the nature of the injustices, which has been incredibly important work to undertake. As Indigenous environmental justice declarations have pointed out for decades, however, decolonization is required to move toward a sustainable future, lest ‘so-called solutions’ further harm Indigenous peoples [14\*]. In fact, as pointed out by Whyte, “colonialism is a form of anthropogenic climate

change” [14\*]. However, insufficient attention has thus far been directed towards how Indigenous knowledge and legal systems can be used to generate well-being and *Indigenous-determined* futures in the face of dramatic environmental and climatic change. In one perspective, there is no doubt that the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and other human rights instruments have a role to play in seeking justice [65]. Yet the ontological and epistemological origins of these instruments differ from those of Indigenous peoples. How do Indigenous peoples *themselves* envision their future in the face of ongoing injustice and lack of vision around the called-for transformation?

As a prime example, Indigenous peoples have offered the vision of *buen vivir*, drawing on Indigenous intellectual and knowledge traditions, which calls for ‘living well’ within a community that extends to the natural world [12,36\*,66]. ‘Living well’ with the Earth is a concept that conveys a deeper understanding of the relationships between human and non-human entities. *Buen vivir* “displaces the centrality of humans as the sole subject endowed with political representation and as the source of all valuation” [36\*]. It confronts colonialism, patriarchy and the conceptual divide between humans and nature. *Buen vivir* has gained currency internationally and has been articulated as a fundamental element of a desirable future as expressed by Indigenous nations in the Rio+20 *International Conference of Indigenous Peoples on Self-Determination and Sustainable Development* [22]:

Indigenous peoples call upon the world to return to dialogue and harmony with Mother Earth, and to adopt a new paradigm of civilization based on *Buen Vivir* — Living Well. In the spirit of humanity and our collective survival, dignity and well-being, we respectfully offer our cultural world views as an important foundation to collectively renew our relationships with each other and Mother Earth and to ensure *Buen Vivir*/living well proceeds with integrity.

*Buen vivir* as an alternative vision continues to develop, yet fundamentally recognizes the relational worldviews and the intrinsic value and agency of the non-human [67].

Other frames and logics that may assist with transformation include the ‘rights of nature’, ‘legal personhood’, Earth Jurisprudence and Earth Centered Law discourses, which extend conventional notions of environmental justice and sustainable futures to a narrative that considers or is inclusive of non-human entities [68]. An emphasis on Earth Centered law demonstrates innovation, based perhaps in part on, or informed by, Indigenous world views [8\*\*,69]. These profound life philosophies are evident in the *Universal Declaration on the Rights of Mother Earth* and the constitutional recognition of the rights of

nature of both Bolivia and Ecuador [70]. 'Rights of nature' approaches to justice for all relations recognize that "all aspects of nature are legal subjects that have inherent rights, and [we] must uphold those rights" [71]. In response, the United Nations adopted a resolution in 2018 on 'Harmony with Nature', that recognizes earth jurisprudence, the rights of nature, albeit in a limited form, confining the recognition to existing sustainable development goals [72,73]. These approaches challenge the status quo ideas of modernity, capitalism, patriarchy, and consumerism that arise from the view that humans are separate from nature. The rights of nature discourse instead views humans as another aspect of the living Earth. Alternate laws, knowledges, legal and governance structures at every level and scale are required if we, as humanity, are to live well with the Earth and support the continuance of life. Existing Indigenous systems of understanding offer living examples and insights into the development of such sustainable alternatives.

To achieve environmental justice, the voices of Indigenous peoples and their stated numerous recommendations for a sustainable future must be heeded at every level. Unfortunately, Indigenous voices remain on the margins in global discussions on the collective future of humanity and the planet. One mechanism that could serve at least as a minimum starting point in resolving this situation is global implementation of the *United Nations Declaration on the Rights of Indigenous Peoples*.

### Conflict of interest statement

Nothing declared.

### References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- of special interest
- of outstanding interest

1. Chisholm Hatfield S, Marino E, Whyte KP, Dello KD, Mote PW: **Indian time: time, seasonality, and culture in Traditional Ecological Knowledge of climate change.** *Ecol Process* 2018, **7**:25.
2. Hoover E: **Environmental reproductive justice: intersections in an American Indian community impacted by environmental contamination.** *Environ Sociol* 2018, **4**:8-21.
3. McGregor D: **Indigenous environmental justice, knowledge and law.** *Kaifou* 2018, **5**:279-296.
4. McGregor D: **Reconciliation and environmental justice.** *J Glob Ethics* 2018, **14**:222-231.
5. Whyte K: **Justice forward: tribes, climate adaptation and responsibility.** *Clim Change* 2013, **120**:517-530.
6. Whyte K: **Settler colonialism, ecology, and environmental justice.** *Environ Soc* 2018, **9**:125-144  
This article makes explicit the link between historical and on going colonialism and environmental injustice. The author argues that colonialism is environmental injustice.
7. Wilson NJ, Harris LM, Joseph-Rear A, Beaumont J, Satterfield T: **Water is medicine: reimagining water security through Tr'ondëk Hwëch'in relationships to treated and traditional water sources in Yukon, Canada.** *Water* 2019, **11**:624
8. Craft A: **Navigating our ongoing sacred legal relationship with Nibi (Water).** *UNDRIP Implementation More Reflections on the Braiding of International, Domestic and Indigenous Laws.* Centre for International Governance Innovation; 2018:53-61  
This contribution offers an excellent introduction to Indigenous legal traditions as they relate to water. This chapter also provides a compelling argument for the agency of water itself as a living being and the obligations of humanity to water itself.
9. McGregor D: **Honoring our relations: an Anishinaabe perspective on environmental justice.** In *Speaking for Ourselves: Environmental Justice in Canada.* Edited by Agyeman J, Cole P, Haluza-DeLay R, O'Riley P. UBC Press; 2009  
This contribution points to the foundational Indigenous environmental worldviews and philosophies that inform a distinct form of 'justice'. All beings and entities in Creation/nature (beyond humans) have access to justice and to live well in Indigenous forms of environmental justice.
10. Whyte K: **The Dakota access pipeline, environmental injustice, and U.S. colonialism.** *RED INK Int J Indig Lit Arts Humanit* 2017, **19**:154-169.
11. **Rights based law for systematic change | indigenous environmental network.** *Movement Rights, Women's Earth & Climate Action Network, Indigenous Environmental Network.* Edited by Biggs S, Lake OO, Goldtooth TBK. 2017 . Available from: <https://www.ienearth.org/rights-based-law-for-systematic-change/>  
This excellent report is a collaboration by three prominent environmental organizations outlining the importance of the emerging narrative on the rights of nature. The authors argue that a radical shift is required to re-orient humanity's relationship to the planet by recognizing the rights of ecosystems and responsibilities to the Earth itself.
12. Samuel S: **Witsaja iki, or the good life in Ecuadorian Amazonia: knowledge co-production for climate resilience.** *Indigenous Peoples and Climate Change: Emerging Research on Traditional Knowledge and Livelihoods.* International Labour Organization; 2019:51-63.
13. McGregor D: **Living well with the earth: indigenous rights and the environment.** In *Handbook of Indigenous Rights.* Edited by Short D, Lennox C. Routledge; 2016:167-180.
14. Whyte K: **Too late for indigenous climate justice: ecological and relational tipping points.** *WIRES Clim Change* 2020, **11**:e603  
This opinion piece provides a case for why ethical and reciprocal relationships between Nation states and civil society is required, lest climate change approaches and solution continue to perpetuate injustices. This article points out how some 'solutions' to climate justice for some people generate injustices for others.
15. Barlow M: **Building the case for the universal declaration of the rights of mother earth. Does Nature Have Rights? Transforming Grassroots Organizing to Protect People and the Planet.** Council of Canadians, Fundacion Pachamama, Global Exchange; 2010:6-11. . Available from: <http://www.globalexchange.org/sites/default/files/IRONREPORT.pdf>.
16. Kari-Oca Declaration. In 1992. Available from: [http://www.lacult.unesco.org/lacult\\_en/docc/Kari-Oca\\_1992.doc](http://www.lacult.unesco.org/lacult_en/docc/Kari-Oca_1992.doc).
17. Kimberley Declaration. In Kimberley, South Africa; 2002. Available from: [http://www.ipcb.org/resolutions/htmls/kim\\_dec.html](http://www.ipcb.org/resolutions/htmls/kim_dec.html).
18. Indigenous Peoples Kyoto Water Declaration. In Kyoto Japan; 2003. Available from: <http://www.waterculture.org/uploads/IPKyotoWaterDeclarationFINAL.pdf>.
19. Mandaluyong Declaration. In 2010. Available from: <https://asianindigenouswomen.org/index.php/climate-change-biodiversity-and-traditional-knowledge/climate-change/64-mandaluyong-declaration-of-the-global-conference-on-indigenous-women-climate-change-and-redd-plus/file>.
20. Manaus Declaration. In 2011. Available from: <http://www.tebtebba.org/index.php/all-resources/category/18-rio-20?download=843:manaus-declaration>.
21. Kari-Oca 2 Declaration. In Rio de Janeiro, Brazil; 2012. Available from: <https://www.ienearth.org/kari-oca-2-declaration/>.



22. *Rio+20 International Conference of Indigenous Peoples on Self-Determination and Sustainable Development (Rio+20 ICIP)*. 2012. Rio De Janeiro.
23. Lima Declaration: **The Lima declaration: world conference of indigenous women: progress and challenges regarding the future we want**. *World Conference of Indigenous Women*. 2013. Available from: In: [http://www.un.org/en/ga/president/68/pdf/6132014Lima-Declaration\\_web.pdf](http://www.un.org/en/ga/president/68/pdf/6132014Lima-Declaration_web.pdf).
24. IPBES: In *Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Edited by Díaz S, Settele J, Brondizio ES, Ngo HT, Guéze M, Agard J, Arneth A, Balvanera P, Brauman KA, Butchart SHM, Chan KMA, Garibaldi LA, Ichii K, Liu J, Subramanian SM, Midgley GF, Miloslavich P, Molnár Z, Obura D, Pfaff A, Polasky S, Purvis A, Razaque J, Reyers B, Roy Chowdhury R, Shin YJ, Visseren-Hamakers IJ, Willis KJ, Zayas CN. Bonn, Germany: IPBES secretariat; 2019.
25. IPCC et al.: **Summary for policymakers**. In *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, In the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*. Edited by Masson-Delmotte V, Zhai P, Pörtner H-O, Roberts D, Skea J, Shukla PR, Pirani A, Moufouma-Okia W, Péan C, Pidcock R, Connors S, Matthews JBR, Chen Y, Zhou X, Gomis MI. 2018.
26. World Health Organization: *COP24 Special Report: Health and Climate Change*. Available from: 2018 In: <https://www.who.int/globalchange/publications/COP24-report-health-climate-change/en/>.
27. United Nations. Climate Change. Available from: <https://www.un.org/en/sections/issues-depth/climate-change/>.
28. Yoder K: **Is it time to retire 'climate change' for 'climate crisis'?** *Grist*. 2019. Available from: In: <https://grist.org/article/is-it-time-to-retire-climate-change-for-climate-crisis/>.
29. Hood M: *CO2 Emissions up 2.7%, World "Off Course" to Curb Warming: Study*. Available from: 2018 In: <https://phys.org/news/2018-12-co2-emissions-world-curb.html>.
30. United Nations – Water: *The United Nations World Water Development Report 2014: Water and Energy*. Available from: 2014 In: <https://www.unwater.org/publications/world-water-development-report-2014-water-energy/>.
31. United Nations - Water: *The United Nations World Water Development Report 2015: Water for a Sustainable World*. Available from: 2015 In: <https://www.unwater.org/publications/world-water-development-report-2015/>.
32. United Nations - Water: *The United Nations World Water Development Report 2016: Water and Jobs*. Available from: 2016 In: <https://www.unwater.org/publications/world-water-development-report-2016/>.
33. United Nations - Water: *The United Nations World Water Development Report 2017: Wastewater the Untapped Resource*. Available from: 2017 In: <https://www.unwater.org/publications/world-water-development-report-2017/>.
34. United Nations - Water: *The United Nations World Water Development Report 2018: Nature-based Solutions for Water*. Available from: 2018 In: <https://www.unwater.org/publications/world-water-development-report-2018/>.
35. United Nations - Water: *The United Nations World Water Development Report 2019: Leaving No One Behind*. Available from: 2019 In: <https://www.unwater.org/publications/world-water-development-report-2019/>.
36. Chuiji M, Rengifo G, Gudynas E, Buen Vivir: In *Pluriverse: A Post-Development Dictionary*. Edited by Kothari A, Salleh A, Escobar A, Demaria F, Acosta A. Tulika Books; 2019:111-114  
This contribution describes the emergence and importance of the concept of Buen Vivir as a goal to support sustainability for all life. Buen Vivir is described as a concept that requires humanity to live well with the Earth itself.
37. Ruru J: **Listening to Papatūānuku: a call to reform water law**. *J Soc N Z* 2018, **48**:215-224  
This article offers an excellent overview of how Maori in New Zealand were able to successfully argue for the Whanganui river as possessing legal rights based on their own legal traditions.
38. Whyte KP: **Indigenous women, climate change impacts, and collective action**. *Hypatia* 2014, **29**:599-616.
39. Williams L: **Climate change, colonialism, and women's well-being in Canada: what is to be done?** *Can J Public Health* 2018, **109**:268-271  
This article offers a feminist critique of the current climate change agenda that continues to fail women's perspectives, knowledge and experiences.
40. Chiblow S: **Anishinabek women's Nibi Giikendaaswin (Water knowledge)**. *Water* 2019, **11**:209  
An excellent article that emphasizes the agency of water as a living being in Indigenous worldview, ontology, and epistemology.
41. Craft A: **Giving and receiving life from Anishinaabe nibi inaakonigewin (our water law) research**. In *Methodological Challenges in Nature-Culture and Environmental History Research*. Edited by Thorpe J, Rutherford S, Sandberg LA. Routledge; 2017:105-119.
42. McGregor D, McGregor H: **All our relations: climate change storytellers**. In *Rising Tides: Reflections for Climate Changing Times*. Edited by Sandilands C. Caitlin Press; 2019:125-129  
This contribution points to the importance of traditional knowledge as expressed through stories as offering explanatory power for understanding climate change from an Indigenous perspective.
43. International Labour Organization: *Indigenous Peoples and Climate Change: Emerging Research on Traditional Knowledge and Livelihoods*. Geneva: Switzerland: International Labour Organization; 2019  
An excellent edited volume that offers research findings from case studies from around the world. The volume highlights the importance of traditional knowledge (TK) in climate change assessments as well pointing to significant gaps in research.
44. Nakashima D, McLean KG, Thulstrup H, Castillo AR, Rubis J, United Nations University Staff et al.: *Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation*. United Nations University - Traditional Knowledge Initiative; 2012.
45. Nelson MK, Shilling D: *Traditional Ecological Knowledge: Learning from Indigenous Practices for Environmental Sustainability*. Cambridge University Press; 2018.
46. Kimmerer RW: *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Milkweed Editions; 2013.
47. Popp JN, Priadka P, Kozmik C: **The rise of moose co-management and integration of Indigenous knowledge**. *Hum Dimens Wildl* 2019, **24**:159-167.
48. Tengö M, Hill R, Malmer P, Raymond CM, Spierenburg M, Danielsen F et al.: **Weaving knowledge systems in IPBES, CBD and beyond—lessons learned for sustainability**. *Curr Opin Environ Sustain* 2017, **26**:17-25  
This article offers a distinct conceptual framework for how Indigenous knowledges can be meaningfully included in conservation and biodiversity frameworks. The article analyzes the 'extractive' research process that undermines the full realization and expression of Indigenous knowledges.
49. Aki Onjisay: *Onjisay Aki International Climate Calls to Action*. Available from: 2017 In: <http://onjisay-aki.org/onjisay-aki-international-climate-calls-action>.
50. Davis H, Todd Z: **On the importance of a date, or decolonizing the Anthropocene**. *ACME Int J Crit Geogr* 2017, **16**:761-780  
This contribution offers a critique of the mainstream narrative of the Anthropocene by offering a decolonizing analysis based on the experience of Indigenous peoples. The authors argue that Indigenous peoples experience the current Anthropocene as ongoing processes of genocide, dispossession, and colonization.
51. Hoover E: *The River is in us: Fighting Toxics in a Mohawk Community*. University of Minnesota Press; 2017.

52. Reo NJ, Ogden LA: **Anishnaabe Aki: an indigenous perspective on the global threat of invasive species**. *Sustain Sci* 2018, **13**:1443-1452.
53. Estes N: *Our History is the Future: Standing Rock Versus the Dakota Access Pipeline, and the Long Tradition of Indigenous Resistance*. Verso Books; 2019.
54. Waldron IRG: *There's Something in the Water: Environmental Racism in Indigenous and Black Communities*. Fernwood Publishing; 2018.
55. Greaves W: **Damaging environments: land, settler colonialism, and security for indigenous peoples**. *Environ Soc Adv Res* 2018, **9**:107-124.
56. Grey S, Patel R: **Food sovereignty as decolonization: some contributions from Indigenous movements to food system and development politics**. *Agric Hum Values* 2015, **32**:431-444.
57. McGregor D: **Reconciliation colonialism and climate change**. In *Policy Transformation in Canada: Is the Past Prologue?*. Edited by Tuohy C, Borwien S, Loewen P, Potter A. University of Toronto Press; 2019:139-147.
58. Cameron ES: **Securing indigenous politics: a critique of the vulnerability and adaptation approach to the human dimensions of climate change in the Canadian Arctic**. *Glob Environ Change* 2012, **22**:103-114.
59. Reo N, Parker A: **Re-thinking colonialism to prepare for the impacts of rapid environmental change**. *Clim Change* 2013, **120**:671-682
- This article reveals how historical processes of colonialism accelerated environmental change and continue to affect the landscape and environment. The authors point out that colonialism must form part of any environmental analysis in the study humans and natural systems interactions.
60. Todd Z: **Indigenizing the Anthropocene**. In *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*. Edited by Davis H, Turpin E. Open Humanities Press; 2015:241-254. . Available from: In: <http://www.openhumanitiespress.org/books/titles/art-in-the-anthropocene/>.
61. Pearce T, Ford J, Cunsolo Willox A, Smit B: **Inuit traditional ecological knowledge (TEK), subsistence hunting and adaptation to climate change in the Canadian Arctic**. *Arctic* 2015, **68**:233-245.
62. Rani U, Oelz M: **Sustaining and preserving the traditional knowledge and institutions of Indigenous communities: reflections on the way forward**. *Indigenous Peoples and Climate Change: Emerging Research on Traditional Knowledge and Livelihoods*. International Labour Organization; 2019:121-128.
63. Reo NJ, Whyte K, Ranco D, Brandt J, Blackmer E, Elliott B: **Invasive species, indigenous stewards, and vulnerability discourse**. *Am Indian Q* 2017, **41**:201-223.
64. Cameron L, Courchene D, Ijaz S, Mauro I: **The Turtle Lodge: sustainable self-determination in practice**. *Altern Int J Indig Peoples* 2019, **15**:13-21.
65. Centre for International Governance Innovation (CIGI): *UNDRIP Implementation More Reflections on the Braiding of International, Domestic and Indigenous Laws*. The Centre for International Governance Innovation; 2018.
66. McGregor D, Minobimaataasiwin: In *Pluriverse: A Post-Development Dictionary*. Edited by Kothari A, Salleh A, Escobar A, Demaria F, Acosta A. Tulika Books; 2019:240-243.
67. Gudynas E: **Buen Vivir: today's tomorrow**. *Development* 2011, **54**:441-447.
68. Sheehan L, Wilson G: *Fighting for Our Shared Future: Protecting Both Human Rights and Nature's Rights*. Earth Law Center; 2015.
69. O'Donnell E, Talbot-Jones J: **Creating legal rights for rivers: lessons from Australia, New Zealand, and India**. *Ecol Soc* 2018, **23** Available from: In: <https://www.ecologyandsociety.org/vol23/iss1/art71/>.
70. Humphreys D: **Rights of Pachamama: the emergence of an earth jurisprudence in the Americas**. *J Int Relat Dev* 2017, **20**:459-484.
71. Cullinan C: **Nature rights**. In *Pluriverse: A Post-Development Dictionary*. Edited by Kothari A, Salleh A, Escobar A, Demaria F, Acosta A. Tulika Books; 2019:243-247.
72. UNGA: *Harmony with Nature Report of the Secretary-General*. . UN Doc. A/RES/72/223 2017.
73. UNGA: *Harmony with Nature*. . UN Doc. A/ RES/73/235 2018.