RECIEL 17 (1) 2008. ISSN 0962 8797

Indigenous Peoples in International Environmental Cooperation: Arctic Management of Hazardous Substances

Henrik Selin and Noelle Eckley Selin

This article reviews the international legal framework on hazardous substances, with an emphasis on the Arctic and the roles of indigenous peoples. Persistent organic pollutants (POPs) and heavy metals pose significant risks to Arctic indigenous populations, mainly through the consumption of traditional foods. Treaties of particular relevance include the Protocols on Heavy Metals and POPs to the Convention on Long-Range Transboundary Air Pollution (1998) and the Stockholm Convention on POPs (2001). Arctic indigenous groups have exerted considerable influence on hazardous substance management through lobbying of national governments, participation in domestic and international scientific assessments, and direct advocacy in regional and global political fora. Their engagement on environmental issues has also helped to shape circumpolar consciousness and political activism among different indigenous groups. At the same time, there remain important limitations on the independent authority and ability to act of indigenous groups. Challenges for Arctic indigenous groups and States include continuing collaborative abatement work targeting many POPs and heavy metals, as well as addressing linkages between hazardous substances and climate change, which is another issue of great Arctic concern.

INTRODUCTION

Human activities within the Arctic region result in relatively few anthropogenic releases of chemicals and heavy metals, yet concentrations of numerous hazardous substances in Arctic human populations and ecosystems are among the highest measured anywhere in the world. These high concentration levels are the result of extensive long-range transport of many hazardous chemicals and heavy metals from diverse origins and sources through air and ocean currents and subsequent deposition in the Arctic. Once these hazardous substances reach the Arctic, they accumulate in living organisms and can pose toxic risks to human beings and animals. Addressing Arctic pollution problems thus requires international cooperation and policy making, which has evolved over the past decades to encompass several overlapping regional and global scientific and political initiatives.

While environmental non-governmental organizations have been active in international politics and policy making for over a century, Arctic indigenous peoples groups did not become engaged in international environmental cooperation until the 1970s. Arctic indigenous peoples are often particularly vulnerable to contamination exposure, and have expressed a very strong interest in international and local pollution issues as they relate to individual and collective human rights and security. Hazardous substances emerged as a critical environmental and human health issue in the Arctic for both indigenous groups and States in the 1980s, and there are several reasons why the participation of Arctic indigenous groups in scientific assessments of hazardous substances and in the development of related international organizations, programmes and legal instruments is worthy of the attention of policy analysts and practitioners.

First, hazardous chemicals and heavy metals remain important Arctic environmental and human health issues that attract sustained scientific and political attention. Second, the close involvement of indigenous groups in the Arctic Monitoring and Assessment Programme (AMAP) and the Arctic Council on hazardous substances is unique in international politics, and sets important precedents for continuing collaboration between indigenous groups and States in future circumpolar environmental assessments and policy making. Third, indigenous groups have had a significant influence on Arctic environmental discourses and the development of international policy on hazardous substances. As such, this case adds to our understanding of how non-State actors' interests can be incorporated in political processes and how indigenous peoples may shape international environmental lawmaking outside the Arctic region, as well as within it.

In this article we review the international legal framework on hazardous substances with reference to the Arctic, in particular for persistent organic pollutants

(POPs) and heavy metals. More specifically, we analyze the roles of Arctic indigenous peoples groups in shaping international scientific and political processes and policy outcomes on hazardous substances in collaboration with the eight Arctic States (Canada, Denmark, Finland, Iceland, Norway, Russian Federation, Sweden and the USA). We also examine the role of Arctic and international cooperation on hazardous chemicals and heavy metals in shaping circumpolar consciousness and political activism among Arctic indigenous groups. In addition, we draw on the case of hazardous substances to briefly discuss the growing involvement of Arctic indigenous groups on climate change, an issue of escalating Arctic importance.

The first section of the article presents major Arctic environmental and human health issues related to hazardous substances. This is continued by a discussion of Arctic indigenous peoples' involvement in circumpolar issues, followed by a section on scientific and political efforts on hazardous substances in the Arctic. Next, the article outlines the development of major regional and global legal efforts on hazardous chemicals and heavy metals of particular relevance to the Arctic, including the Protocols on POPs and Heavy Metals to the Convention on Long-Range Transboundary Air Pollution (CLRTAP),[1] the Stockholm Convention on POPs,[2] and ongoing efforts to create a global mercury treaty. The article ends with a short discussion of the continuing toxic challenges and future involvement of indigenous peoples in international environmental cooperation, including climate change.

ARCTIC ENVIRONMENTAL POLLUTION AND HUMAN HEALTH ISSUES

Although the Arctic is considered to be one of the most pristine environments on Earth and remains relatively undeveloped, high levels of a host of hazardous substances have been found across the region. Levels of hazardous chemicals were systematically detected in Arctic biota as early as the 1960s, and measurements made in Canada in the 1980s as part of a national initiative to assess environmental contamination by polychlorinated biphenyls (PCBs) found unexpectedly high levels in isolated areas.[3] In 1986, Canadian researchers expecting to measure clean baseline samples found that breast milk from Inuit women contained levels of hazardous chlorinated organic chemicals far above those in southern Canada.[4] These findings have been supported by numerous more recent scientific studies on POPs contamination in the Arctic.[5]

One of the peculiar chemical properties of many major POPs such as PCBs and dichlorodiphenyl trichloroethane (DDT) is their propensity to accumulate preferentially in environments at higher latitudes; because they are semi-volatile, they volatilize in warmer climates and travel poleward in a cycle of volatilization and condensation, sometimes referred to as the 'grasshopper effect' because of the way emissions 'hop' north in a series of steps before they condense systematically in colder regions.[6] In the Arctic, these substances start to bioaccumulate in the fatty tissues of living organisms. The long length of Arctic marine food webs with species that have a relatively high fat content allows a multitude of hazardous chemicals to reach comparatively high levels, as concentrations are passed up through food webs to predators at higher trophic levels (a process termed biomagnification).

Arctic indigenous peoples who subsist on traditional diets of fish and other large marine mammals at the high end of local food webs can be particularly vulnerable to exposure to high levels of POPs. Many of the POPs that are found at relatively high concentration levels in the Arctic pose well-known dangers to human health and the environment. High-profile poisoning incidents in Taiwan (PCBs) in 1968 and in Seveso, Italy (dioxins) in 1976 showed the acute adverse health effects of POPs.[7] Scientific knowledge of

[1] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Århus, 24 June 1998); Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals (Århus, 24 June 1998).

[2] Stockholm Convention on Persistent Organic Pollutants (Stockholm, Sweden, 22 May 2001).

[3] G. Bowes and C. Jonkel, 'Presence and Distribution of Polychlorinated Biphenyls (PCB) in Arctic and Subarctic Marine Food Chains', 32:11 *Journal of the Fisheries Research Board of Canada* (1975), 2111; R. Norstrom *et al*., 'Organochlorine Contaminants in Arctic Marine Food Chains: Identification, Geographical Distribution, and Temporal Trends in Polar Bears', 22:9 *Environmental Science and Technology* (1988), 1063.

[4] E. Dewailly and C. Furgal, 'POPs, the Environment, and Public Health', in D.L. Downie and T. Fenge (eds), *Northern Lights Against POPs* (McGill–Queen's University Press, 2003), 3; E. Dewailly *et al*., 'High Levels of PCBs in Breast Milk of Inuit Women from Arctic Quebec', 43:1 *Bulletin of Environmental Contamination and Toxicology* (1989), 641.

[5] Arctic Monitoring and Assessment Programme, *Arctic Pollution 2002* (AMAP, 2002).

[6] F. Wania and D. Mackay, 'Tracking the Distribution of Persistent Organic Pollutants', 30:9 *Environmental Science and Technology* (1996), A390.

[7] N. Eckley and H. Selin, 'All Talk, Little Action: Precaution and European Chemicals Regulation', 11:1 *Journal of European Public Policy* (2004), 78; S.-T. Hsu *et al*., 'Discovery and Epidemiology of PCB Poisoning in Taiwan: A Four-Year Follow-up', 59 *Environmental Health Perspectives* (1985), 5; P.A. Bertazzi *et al*., 'The Seveso Studies on Early and Long-Term Effects of Dioxin Exposure: A Review', 106(S-2) *Environmental Health Perspectives* (1998), 625.

long-term effects, such as the carcinogenicity of organochlorine pollutants, emerged in the 1970s.[8] In the late 1980s, scientific studies detected endocrine disruptive effects in wildlife and human beings from exposure to lower doses of hazardous organic chemicals, and these findings have been supported by many more recent studies.[9]

Several heavy metals, and in particular mercury, are also of significant Arctic concern.[10] Environmental levels of mercury have increased dramatically since pre-industrial times.[11] Studies in the 1960s identified mercury and other heavy metals in marine mammals.[12] Concern about human exposure was raised in the 1970s, as elevated levels were detected in Arctic populations.[13] While mercury emissions in North America and Europe have been falling since the 1980s because of a phase-out of mercury use and the implementation of technologies reducing mercury emissions from power plants, a rapid growth in industrial capacity and the use of coal-fired power plants – particularly in China – has resulted in an increase in mercury emissions in other regions. Asia currently accounts for roughly 50% of global mercury emissions.[14] Epidemiological studies show serious human health risks posed by methylmercury, including at low doses.[15]

A collection of scientific data from across the Arctic suggests that subtle health effects in some populations may be occurring due to high exposure to POPs and mercury through the consumption of traditional foods.[16] At the same time, traditional foods have high levels of beneficial vitamins, minerals and fatty acids, and their consumption is known to have many positive health effects. In this respect, AMAP experts, in collaboration with indigenous groups and domestic public health authorities in the Arctic States, stress the need to use a risk–benefit approach to balance the nutritional benefits of traditional foods and breastfeeding with exposure to hazardous substances, especially in highly impacted areas. AMAP experts recommend that such risk–benefit approaches are developed locally as deemed necessary by health authorities and 'in close consultation with affected communities'.[17]

INDIGENOUS PEOPLES AND CIRCUMPOLAR ACTIVISM

Approximately 4 million people live in the Arctic, including members of 30 different indigenous groups. Indigenous peoples make up 10% of the Arctic population; however, nearly half of all Canadian Arctic residents and the majority of the people living in Greenland are indigenous.[18] In general, the lives of Arctic residents are closely linked to their natural environment through the dependence on a natural, resource-based economy and subsistence hunting and fishing, as well as through an intimate spiritual connection to the environment.[19] Arctic communities are increasingly affected by accelerating globalization, which has prompted many socio-economic and other lifestyle changes.[20] Thus for this reason, environmental problems and changes impacting human lives and traditions are of great concern in an Arctic context, especially hazardous chemicals, heavy metals and, more recently, climate change.

Over the past several decades, Arctic indigenous peoples groups have become increasingly active in circumpolar and international environmental, scientific and political processes. As early as at the first Arctic People's Conference in Copenhagen in 1973, attendees argued that there was a need for expanded, institutionalized collaboration among different indigenous groups to promote policies that would protect their traditional ways of life and increase their influence over Arctic State environment and development

[8] R.J. Kociba *et al*., 'Results of a Two-Year Chronic Toxicity and Oncogenicity Study of 2,3,7,8-Tetrachlorodibenzo-p-dioxin in Rats', 46:2 *Toxicology and Applied Pharmacology* (1978), 279.
[9] T. Colborn, D. Dumanoski and J.P. Myers, *Our Stolen Future* (Dutton, 1996).
[10] See Arctic Monitoring and Assessment Programme, n. 5 above; K.A. Rahn and D.H. Lowenthal, 'Elemental Tracers of Distant Regional Pollution Aerosols', 223:4632 *Science* (1984), 132.
[11] N.E. Selin *et al*., 'Global 3-D Land–Ocean–Atmosphere Model for Mercury: Present-Day vs. Pre-Industrial Cycles and Anthropogenic Enrichment Factors for Deposition', *Global Biogeochemical Cycles* (forthcoming, 2008).
[12] J.H. Koeman *et al*., 'Mercury–Selenium Correlations in Marine Mammals', 245:5425 *Nature* (1973), 385.
[13] J.C. Hansen, 'A Survey of Human Exposure to Mercury, Cadmium and Lead in Greenland', 3 *Meddelelser om Grønland, Man and Society* (1981), 3; J.C. Hansen and H.S. Pedersen, 'Environmental Exposure to Heavy Metals in North Greenland', 41 *Arctic Medical Research* (1986), 21.
[14] E.G. Pacyna *et al*., 'Global Anthropogenic Mercury Emission Inventory for 2000', 40:22 *Atmospheric Environment* (2005), 4048.
[15] K.S. Crump *et al*., 'Influence of Prenatal Mercury Exposure Upon Scholastic and Psychological Test Performance: Benchmark Analysis of a New Zealand Cohort', 18:6 *Risk Analysis* (1998), 701; P. Grandjean *et al*., 'Cognitive Deficit in 7-Year-Old Children with Prenatal Exposure to Methylmercury', 19:6 *Neurotoxicology and Teratology* (1997), 417; National Research Council, *Toxicological Effects of Methylmercury* (National Academy Press, 2000).
[16] See Arctic Monitoring and Assessment Programme, n. 5 above.
[17] Arctic Monitoring and Assessment Programme, *AMAP Assessment 2002: Human Health in the Arctic* (AMAP, 2003), at xiii.
[18] Arctic Climate Impact Assessment, *Impacts of a Warming Arctic* (Cambridge University Press, 2004); W.E. Burhenne, 'The Arctic: Towards a New Environmental Regime?', 37:2/3 *Environmental Policy and Law*, 249.
[19] Arctic Monitoring and Assessment Programme, *Arctic Pollution Issues: A State of the Arctic Environment Report* (AMAP, 1997).
[20] Stefansson Arctic Institute, *Arctic Human Development Report* (Stefansson Arctic Institute, 2004).

policies. The World Council of Indigenous Peoples was founded in Canada in 1975 to promote indigenous interests worldwide.[21] Related to these efforts, the Inuit Circumpolar Conference (currently the Inuit Circumpolar Council (ICC)) was formed in 1977, establishing an institutional connection between different Arctic indigenous groups.[22]

The ICC represents the approximately 150,000 Inuit living in Alaska, Canada and Greenland, and the Chukotka of Russia.[23] Two fundamental goals of the ICC are the protection of the Arctic environment and the achievement of maximum regional self-government.[24] To these ends, the ICC has acted to strengthen Inuit unity, promote Inuit rights, develop and encourage policies to safeguard the Arctic environment, and seek full participation in the political, economic and social development of the circumpolar region. The ICC has received much financial support from Canada to participate in Arctic assessments and policy making.[25] The Indigenous Peoples' Secretariat located in Copenhagen provides administrative support to the ICC and other groups.[26] In addition, the ICC has Special Consultative Status (formerly Category II) with the United Nations Economic and Social Council.

Indigenous groups have consistently supported the idea of expanded international law in the Arctic as a means for advancing their political agenda and achieving collective goals. They have done so in the context of seeking increased self-determination within the States that they live, but have typically stopped short of seeking full secession.[27] In their support for increased Arctic cooperation, indigenous groups have consistently advocated for improved environmental circumpolar governance, which they regard as critical to issues of local ecosystem and land management, natural resource extraction and human health protection. In fact, indigenous groups were stressing environmental issues and building formal cooperative linkages across the region ahead of any of the Arctic States. An observer in 1981 noted:

> It is a mark of the times that the only continuing Arctic Forum to date is a Circumpolar Conference of Alaskan, Canadian, and Greenlander Inuit, initiated at Barrow, Alaska in June 1977. Trans-Arctic diplomacy was thus pioneered not by the six governments of the adjacent states, but by a non-governmental 'trans-national' association of native peoples.[28]

Arctic cooperation was expanded following the end of the Cold War.[29] The most prominent forum in which Arctic countries and indigenous peoples interact on environmental issues is the Arctic Council, which began operations in 1998. All eight Arctic countries as well as six permanent participants (organizations made up of at least 50% indigenous peoples) are members of the Arctic Council. The current permanent participants are the ICC, the Aleut International Associations, the Arctic Athabaskan Council, the Gwich'in Council International, the Saami Council and the Russian Arctic Indigenous Peoples of the North. The position of permanent participant is more than an observer, and gives indigenous groups the right to participate in all discussions, to put forward proposals and to openly disagree with Member States. One analyst also noted that:

> . . . the [Arctic] Council not only presents an opportunity for the indigenous groups to express their views to and seek support from the Council, but it facilitates a dialogue between indigenous populations of particular states and the government of those states. In some cases, that dialogue has historically proven difficult for domestic reasons. That indigenous groups can participate prominently and 'at the table' with states at this forum fosters particularly positive international and domestic interactions.[30]

Yet, the permanent participants lack full voting powers.[31] The Arctic Council is also constituted as a 'high-level forum', rather than as an inter-governmental organization with independent legal personality.[32] Ministerial meetings – the highest level of political interaction – are organized every two years to set the overall agenda for all the activities and programmes that are developed under the auspices of the Arctic Council. In addition, the Senior Arctic Officials – the designated point people in each Member State for Arctic issues – meet with representatives of the six permanent participants at least twice a year to oversee the work of all subsidiary bodies. The Arctic Council bodies and programmes are funded by Member States on a voluntary basis, with Norway also paying for the AMAP Secretariat, which is located in Oslo.

[21] T. Semenova, 'Political Mobilization of Northern Indigenous Peoples in Russia', 43:224 *Polar Record* (2007), 23, at 24.
[22] J. Shadian, 'Remaking Arctic Governance: The Construction of an Arctic Inuit Polity', 42:222 *Polar Record* (2006), 249.
[23] The ICC uses Inuit to refer to the Inupiat, Yupik (Alaska), Inuit, Inuvialuit (Canada), Kalaallit (Greenland) and Yupik (Russia).
[24] See J. Shadian, n. 22 above.
[25] M. Tennberg, 'Indigenous Peoples Involvement in the Arctic Council', IV *Northern Notes* (1996), 21.
[26] E.T. Bloom, 'Establishment of the Arctic Council', 9:3 *The American Journal of International Law* (1999), 712, at 719.
[27] T. Koivurova and L. Heinämäki, 'The Participation of Indigenous Peoples in International Norm-Making in the Arctic', 42:221 *Polar Record* (2006), 101.
[28] L.P. Bloomfield, 'The Arctic Last Unmanaged Frontier', 60:1 *Foreign Affairs* (1981), 87, at 90.
[29] C. Keskitalo, 'International Region-Building: Development of the Arctic as an International Region', 42:2 *Cooperation and Conflict* (2007), 187; O.R. Young, *Creating Regimes: Arctic Accords and International Governance* (Cornell University Press, 1998).
[30] See E.T. Bloom, n. 26 above, at 717.
[31] See M. Tennberg, n. 25 above.
[32] See E.T. Bloom, n. 26 above, at 712.

The USA, however, has objected to the use of the word 'peoples' to describe indigenous groups, as that may imply sovereign rights under international law. As a result, a footnote was attached to the 1996 Ottawa Declaration establishing the Arctic Council, stating that '(t)he use of the term "peoples" in this Declaration shall not be constructed as having any implications as regard the rights which may attach to the term under international law'.[33] Nevertheless, the Arctic Council remains the premier high-level circumpolar political forum more than one decade after its creation. Representatives of both the Arctic States and the permanent participants continue to use the Council to promote environmental protection and sustainable development throughout the region. To these ends, the specific economic, social and environmental circumstances of indigenous peoples are at the forefront of many cooperative efforts.

The recent expansion of Arctic environmental cooperation and the building of regional political institutions – largely coinciding with the first International Decade of the World's Indigenous People, 1995–2004 – have also served to mobilize and build close connections between different indigenous groups living in the Arctic region. In this respect, the close and pioneering involvement of a host of indigenous groups in Arctic organizations and politics has served an important dual purpose: it has both enhanced the capacity and influence of indigenous groups, bringing indigenous perspectives to the forefront in regional environmental assessments and policy making, and helped build common interests and a basic, collective identity among the indigenous peoples of the Arctic, thereby shaping what we see as 'the Arctic region'.[34]

Arctic indigenous groups view chemical contamination issues as a question of food security for those communities and individuals who are adversely affected, but have only minimally (or not at all) contributed to the problem. Their activism in this area follows directly from their continuing concerns about issues of human rights, self-determination and sovereignty, as the security concept has been expanded into the area of human security encompassing aspects of individual and collective environmental and health security. In this respect, contamination of Arctic ecosystems is a threat to both the environment and human security. In a statement released in conjunction with the 2002 AMAP pollution assessment, the Indigenous Peoples Secretariat, on behalf of several indigenous groups, noted:

> The Arctic is our homeland. Places that others call remote are central to our existence and have been for millennia. We, the Indigenous Peoples of the Arctic, wish to protect a way of life based on a unique economic and spiritual relationship to the land. Yet, because the wild foods we eat and water we drink are inextricably linked to the overall health of the northern biosphere, our long-term health and survival as cultures and societies depends upon Arctic nation States acting as responsible stewards of the Arctic environment.[35]

ARCTIC EFFORTS ON HAZARDOUS SUBSTANCES

Of the different environmental concerns addressed in the Arctic over the past few decades, the issue of hazardous chemical and heavy metal contamination has been among the most significant. Whereas indigenous peoples were often marginalized during much early domestic environmental policy making, they have recently become a great deal more active and effective in promoting their interests.[36] There is currently no Arctic-specific pollution treaty addressing these or any other contaminants; instead, Arctic cooperative efforts have focused on assessing environmental and human health situations with respect to major pollutants, as well as supporting outside regional and global political and legal developments of importance to Arctic conditions.

Concerns in industrialized areas initially raised awareness of hazardous chemicals and heavy metals. The Canada–US Great Lakes Water Quality Agreement (1972), renewed in 1978, set a goal of zero discharge of persistent toxic substances into the Great Lakes ecosystem.[37] Scientists seeking to compare these levels to unexposed populations began research in the Arctic. In response to the surprising levels of contaminants found in the Arctic, Canada's federal government launched the Arctic Environmental Strategy in 1991. As part of this strategy, the Northern Contaminants Program was created 'to work towards reducing and, where possible, eliminating contaminants in traditional/country foods, while providing information that assists individuals and communities in making informed decisions about their food use'.[38] Several indigenous groups participated in this work, which

[33] Ibid., at 717, footnote 20.
[34] See C. Keskitalo, n. 29 above; and J. Shadian, n. 22 above.
[35] See Arctic Monitoring and Assessment Programme, n. 5 above, at v.
[36] G. Poelzer, 'Aboriginal Peoples and Environmental Policy in Canada: No Longer at the Margins', in D.L. VanNijnatten and R. Boardman (eds), *Canadian Environmental Policy: Context and Cases* (Oxford University Press, 2002), 87.
[37] The Great Lakes Water Quality Agreement (Ottawa, 15 April 1972); Great Lakes Water Quality Agreement of 1978 (Ottawa, 22 November 1978).
[38] Indian and Northern Affairs Canada, *Northern Contaminants Program (NCP): Operational Management Guide* (Indian and Northern Affairs Canada, March 2006), at 2.

helped to raise their capacity to participate in international fora.[39]

The first major circumpolar political effort addressing pollution of hazardous substances was the launch in 1991 of the Arctic Environmental Protection Strategy (AEPS), which had been proposed at a ministerial meeting of the Arctic States two years earlier.[40] The AEPS as a political – but not legal – commitment among the Arctic States was a collective acknowledgement of the significant environmental and human health threats that were posed by hazardous substances: two of the five key objectives of the AEPS were 'to protect the Arctic ecosystems including humans' and 'to identify, reduce, and, as a final goal, eliminate pollution'.[41] In implementing the AEPS, the Arctic States emphasized the importance and value of indigenous perspectives, values and practices, bringing indigenous knowledge into the center of the AEPS's environmental assessment and policy making processes.[42]

Three indigenous peoples groups participated in the AEPS as observers: the ICC, the Nordic Saami Council and the USSR Association of Small Peoples of the North (later renamed the Russian Association of Indigenous Peoples of the North). AMAP was established as one of four working groups under the AEPS and was tasked with monitoring the levels and assessing the effects of anthropogenic pollution in the Arctic environment.[43] Organic chemicals and heavy metals were two of the six priority pollution issues identified by AMAP.[44] The AEPS was followed up by the establishment of the Arctic Council in 1996 with particularly strong backing from Canada. The Arctic Council, which has continued to work on hazardous substances and several other major Arctic environmental issues, renewed the mandate for all the four AEPS working groups, including AMAP, and folded these into its structure.

Indigenous groups participate in the AMAP assessments as official observers. The prefaces to both the 1997 and 2002 synthesis reports noted that financial contributions from several Arctic countries enabled experts from indigenous peoples organizations to play an active role in the assessment work. The first AMAP assessment – in part surveying environmental levels, trends and health effects of POPs and heavy metals – was completed in 1997; a synthesis report was released that year, and a detailed scientific background report was published in 1998. In these reports, AMAP experts expressed concerns about many sensitive species and ecosystems in geographical areas such as Svalbard, eastern Greenland and the Canadian Arctic, and related human exposure. The AMAP participants, moreover, called for improving the use of indigenous knowledge in environmental research and policy making, and the establishment of better programmes for gathering and communicating contaminant information.[45]

AMAP released its second series of assessment reports beginning in 2002, updating its earlier findings.[46] The second report series consisted of a summary report and individual scientific reports on a similar set of issues as the first assessment, including POPs, heavy metals and human health. The second assessment largely reaffirmed the main conclusions of the earlier assessment work. In addition, the reports provided more detailed scientific data on levels and trends of hazardous substances in the Arctic environment. Specifically, AMAP concluded that there were clear adverse effects from several older chemicals and heavy metals, including mercury and PCBs, in many Arctic species.[47] In addition, the AMAP reports noted that more recent chemicals including polybrominated diphenyl ethers (PBDEs) and polychlorinated naphthalenes were of increasing concern.[48] AMAP is engaged in ongoing work to issue updated assessments on human health, mercury and POPs.

As part of their work in the Arctic Council, including under AMAP, Member States and indigenous peoples groups have advocated for additional international assessment and political work on hazardous substances as a way to address Arctic pollution problems. Specifically, the 1997 AMAP report urged countries to 'work vigorously for the expeditious completion of negotiations' of the CLRTAP Protocols on POPs and Heavy Metals, which were then in the final stages of development. In addition, AMAP members called on countries to support global abatement efforts on POPs under the guidance of the United Nations Environment Programme (UNEP) and the Intergovernmental Forum on Chemical Safety, as the international community was preparing for the

[39] T. Fenge, 'POPs and Inuit: Influencing the Global Agenda', in D.L. Downie and T. Fenge (eds), n. 4 above, 196.
[40] D.R. Rothwell, 'International Law and the Protection of the Arctic Environment', 44:2 *International and Comparative Law Quarterly* (1995), 280.
[41] See E.T. Bloom, n. 26 above, at 712–713.
[42] See M. Tennberg, n. 25 above; Arctic Environmental Protection Strategy, *Declaration on the Protection of Arctic Environment* (Rovaniemi, Finland, 14 June 1991).
[43] The other three working groups were: the Conservation of Arctic Flora and Fauna (CAFF) working group; the Emergency Prevention, Preparedness and Response (EPPR) working group; and the Protection of the Arctic Marine Environment (PAME) working group.
[44] The other priority pollution issues were oil, noise, radioactivity and acidification.
[45] See Arctic Monitoring and Assessment Programme, n. 19 above.
[46] See Arctic Monitoring and Assessment Programme, n. 5 above.
[47] Ibid., at viii.
[48] Ibid.

negotiations of a global POPs treaty. In these regional and global processes, Arctic indigenous peoples groups played critical roles.

REGIONAL POLICY DEVELOPMENTS ON POPS AND HEAVY METALS

Canadian government representatives in the late 1980s brought the issue of long-range transport of persistent organic contaminants to the Arctic to the attention of several different international organizations, but few were interested in pursuing international action at the time.[49] CLRTAP, a regional agreement established under the auspices of the United Nations Economic Commission for Europe covering North America, Europe and the area of the former Soviet Union, was the only forum that expressed an interest in assessing the issue further. Sweden was another early advocate for CLRTAP involvement in hazardous chemicals, based on a concern for the effects of long-range pollution transport to the Arctic environment and regional seas.[50]

Continuing their leadership on hazardous chemicals, Canada and Sweden co-chaired the CLRTAP Task Force on POPs, conducting an assessment on POPs pollution in the northern environment between 1991 and 1994.[51] A parallel CLRTAP Task Force on Heavy Metals, chaired by the Czech Republic, addressed lead, cadmium and mercury contamination issues.[52] The two Task Force reports highlighted several problems in the northern environment with both POPs and heavy metals, and led to further assessments from 1995 to 1996, designed to develop a basis for political negotiations. During the CLRTAP assessments, as well as the early protocol negotiations, indigenous groups were not directly involved (but lobbied national delegations between meetings, particularly in Canada).[53] However, as the protocol negotiations progressed, indigenous groups became much more active.

In particular, indigenous groups in 1997 formed a coalition to advocate for the development of POPs policy. Called the Northern Aboriginal Peoples' Coordinating Committee on POPs (and later renamed the Canadian Arctic Indigenous Peoples Against POPs (CAIPAP)), the coalition included participants from five different indigenous groups.[54] The ICC also sent an observer to the final CLRTAP negotiating sessions, where the ICC used its growing influence to propose specific language for the Preamble text through a cooperative Chair of the negotiations and with the support of several Arctic countries.[55] As a result, the CLRTAP POPs Protocol explicitly refers to the Arctic region in several places, including an acknowledgment that Arctic ecosystems and indigenous people, who subsist on Arctic fish and mammals, are particularly at risk for POPs because of their biomagnification.

The 1998 CLRTAP POPs Protocol sets the ultimate objective of eliminating any discharges, emissions and losses of POPs. The 16 chemicals originally regulated are listed in Table 1. The Protocol bans the production and use of eight POPs (aldrin, chlordane, chlordecone, dieldrin, endrin, hexabromobiphenyl, mirex and toxaphene); four POPs are scheduled for elimination at a later date (DDT, heptachlor, hexaclorobenzene and PCBs); and the use of three POPs is severely restricted (DDT, hexachlorocyclohexane (including lindane) and PCBs). In addition, the Protocol sets technical standards for the control of four by-products: dioxins, furans, polycyclic aromatic hydrocarbons and hexachlorobenzene (as such, hexachlorobenzene is listed both as a commercial chemical and as a by-product). The Protocol entered into force in 2003. Six of the eight Arctic States are currently parties (Russia has not signed, and the USA has not ratified the treaty).

The CLRTAP Heavy Metals Protocol states that measures to control heavy metal pollution benefit the Arctic environment. The Protocol requires parties to reduce emissions of lead, cadmium and mercury to 1990 levels, targeting emissions from industrial sources, combustion processes and waste incineration. It sets limit values for emissions from stationary sources, requiring the application of best available techniques. The Protocol requires parties to phase out leaded petrol, and introduces measures to lower heavy metal emissions, including mercury, from products such as batteries, thermostats, switches, thermometers, fluorescent lamps, dental amalgam, pesticides and paint. The CLRTAP Heavy Metals Protocol entered into force in 2003. Six of the eight Arctic States are parties (Russia has not signed, and Iceland has not ratified the treaty).

[49] H. Selin and N. Eckley, 'Science, Politics, and Persistent Organic Pollutants: Scientific Assessments and their Role in International Environmental Negotiations', 3:1 *International Environmental Agreements: Politics, Law and Economics* (2003), 17.
[50] H. Selin, 'Regional POPs Policy: The UNECE CLRTAP POPs Protocol', in D.L. Downie and T. Fenge (eds), n. 4 above, 111; and H. Selin and S.D. VanDeveer, 'Baltic Sea Hazardous Substances Management: Results and Challenges', 33:3 *Ambio* (2004), 153.
[51] See H. Selin, ibid., at 114.
[52] Executive Body for the Convention on Long-Range Transboundary Air Pollution, *Heavy Metals: Draft Executive Summary of the Substantiation Report of the Task Force on Heavy Metals led by the Czech Republic* (EB.AIR/WG.6/R.21/Add.1, 22 April 1994).
[53] See T. Fenge, n. 39 above, at 195.
[54] Ibid., at 196.
[55] Ibid., at 199–200.

TABLE 1 POPS INCLUDED AND/OR PROPOSED UNDER THE CLRTAP POPS PROTOCOL AND THE STOCKHOLM CONVENTION

CHEMICALS	*CLRTAP*	*STOCKHOLM*	*PROPOSED: CLRTAP*	*PROPOSED: STOCKHOLM*
Aldrin	√	√		
Chlordane	√	√		
Chlordecone	√			√
DDT	√	√		
Dieldrin	√	√		
Dioxins	√	√		
Endosulfan				√
Endrin	√	√		
Furans	√	√		
Heptachlor	√	√		
Hexabromobiphenyl	√			√
Hexachlorobenzene	√	√		
Hexachlorobutadiene			√	
Hexachlorocyclohexane	√[a]			√[b]
Mirex	√	√		
Octabromodiphenyl ether			√	√
PCB	√	√		
Pentabromodiphenyl ether			√	√
Pentachlorobenzene			√	√
Perfluorooctanesulfonate			√	√
Polychlorinated naphthalene			√	
Polycyclic aromatic hydrocarbons	√			
Short-chain chlorinated paraffins			√	√
Toxaphene	√	√		

a. Under the CLRTAP POPs Protocol, hexachlorocyclohexane is listed as one set of substances and is stated to include lindane (gamma-hexachlorocyclohexane).
b. Under the Stockholm Convention, three hexachlorocyclohexane preparations (alpha-hexachlorocyclohexane, beta-hexachlorocyclohexane and lindane) have been nominated separately, making the total number of nominated substances to date 11.

GLOBAL POLICY ACTIONS ON POPS AND HEAVY METALS

The development of the CLRTAP POPs Protocol acted as an important stepping stone for global action.[56] In May 1995, UNEP's Governing Council initiated a global POPs assessment process to be carried out by the Inter-Organization Programme for the Sound Management of Chemicals, working with two other international organizations, the International Programme on Chemical Safety and the Intergovernmental Forum on Chemical Safety. In October of the same year, the Conference to Adopt a Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, held in Washington DC, recommended the development of a global legally binding instrument to control POPs. Following the conclusion of the global assessment process, UNEP's Governing Council in 1997 initiated treaty negotiations on 12 selected POPs (the so-called 'dirty dozen').[57]

Using the ICC's UN observer status, Arctic indigenous peoples joined together to try to influence the negotiations. At the first negotiating session of the global Stockholm Convention on POPs in the summer of 1998 in Montreal, Sheila Watt-Cloutier, Canadian president of the ICC, made an intervention on the very first day of negotiations, stressing the public health threat from POPs contamination in Arctic food webs.[58] Several Arctic indigenous representatives also parti-

[56] N.E. Selin, 'From Regional to Global Information: Assessment of Persistent Organic Pollutants', in R.B. Mitchell *et al*. (eds), *Global Environmental Assessments: Information and Influence* (MIT Press, 2006), 175.

[57] UNEP Governing Council, International Action to Protect Human Health and the Environment through Measures which will Reduce and/or Eliminate Emissions and Discharges of Persistent Organic Pollutants, including the Development of an International Legally Binding Instrument (Decision 19/13C, 7 February 1997).

[58] R. Campbell *et al*., 'POPs INC-1 Highlights: Monday, 29 June 1998', 15:6 *Earth Negotiations Bulletin* (30 June 1998).

cipated in a forum organized by non-governmental organizations immediately prior to the beginning of negotiations.[59] In addition, at the second negotiating session in Nairobi in January 1999, Watt-Cloutier presented UNEP's Executive Director Klaus Töpfer with an Inuit soapstone carving of a mother and child; this was carried by John Buccini, the chair of the negotiations, to every meeting as a symbol of the moral imperative to establish the Convention.

The strong influence of Arctic interests in the negotiations on the Stockholm Convention, however, was not without controversy. While POPs contamination was clearly a particular problem for the Arctic region, delegates from northern countries were careful not to give the impression that these chemicals were only problematic there, and that the North was thus imposing restrictions on chemicals use in the South to remedy an Arctic problem.[60] In fact, hazardous chemicals pose large contamination and management problems in many developing countries as well. North–South political tensions nevertheless came to a head at the fourth negotiating session in Bonn, Germany, in March 2000.[61] Watt-Cloutier notes that in her interventions at that meeting, she attempted to bridge the gap between North and South by emphasizing the shared human dimension of the POPs problem.[62]

The Stockholm Convention sets the objective of protecting human health and the environment from POPs. The concerns voiced by Arctic indigenous groups are reflected in the Stockholm Convention, which was adopted in May 2001. The Preamble acknowledges that Arctic ecosystems and indigenous communities are particularly at risk because of the biomagnification of POPs and the contamination of traditional foods. The Stockholm Convention originally covered 12 POPs, which are listed in Table 1. It bans the production and use of nine commercial POPs (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene and PCBs), but parties can apply for country-specific exemptions, which are listed in a special Register. The production and use of DDT is restricted, but DDT can still be used for disease vector control, in particular against malaria-carrying mosquitoes.

The Stockholm Convention also calls on parties to ban the import or export of all regulated commercial POPs, except for the purpose of their environmentally sound disposal. Export of POPs to non-parties is allowed only if the importer declares the intended use, commits to minimize emissions and complies with the waste management and disposal provisions that are outlined under the Convention. In addition, the Stockholm Convention requires parties to minimize releases of the four by-products with the goal of their ultimate elimination where feasible: dioxins, furans, hexachlorobenzene and PCBs. The Stockholm Convention entered into force in May 2004, and six of the eight Arctic States are parties (Russia and the USA have yet to ratify the treaty).

There are also ongoing efforts on mercury abatement.[63] The Arctic Council in 2000 noted that release of mercury has harmful effects on human health and ecosystems, and called upon UNEP to conduct a global mercury assessment.[64] This assessment, which was completed in 2003, identified mercury as a pollutant of global concern and referred to Arctic impacts in several places. In this process, the Canadian Arctic Resources Committee and the Grand Council of the Crees, among others, submitted comments. The Canadian Arctic Resources Committee stressed the need for immediate action to reduce anthropogenic emissions 'before the environmental load becomes too great for the Arctic ecosystem to bear'. Its accompanying report surveyed levels, pathways and exposure to mercury in the Arctic environment.[65] The Crees' statement focused on their experience as a community exposed to methylmercury through subsistence fishing.[66]

Efforts to initiate negotiations on a global mercury treaty, however, have thus far failed, with significant political differences among the Arctic States. The USA and Canada are two of the strongest opponents, arguing that it would be too costly to negotiate a treaty, instead preferring continuing development of voluntary abatement efforts. The USA and Canada also resist the idea of global heavy metals controls more broadly, and fear that a mercury treaty could be a first

[59] S. Watt-Cloutier, 'The Inuit Journey Towards a POPs-Free World,' in D.L. Downie and T. Fenge (eds), n. 4 above, 256.
[60] See N.E. Selin, n. 56 above, at 191.
[61] See S. Watt-Cloutier, n. 59 above, at 261.
[62] Ibid.

[63] N.E. Selin and H. Selin, 'Global Politics of Mercury Pollution: The Need for Multi-Scale Governance', 15:3 *RECIEL* (2006), 258.
[64] Barrow Declaration on the Occasion of the Second Ministerial Meeting of the Arctic Council (Barrow, 13 October 2000).
[65] Canadian Arctic Resources Committee, *Subject: Information Gathering Phase for the UNEP Global Assessment of Mercury* (Submission to UNEP Chemicals, 10 September 2001), available at <http://www.chem.unep.ch/mercury/2001-ngo-sub/sub2ngo.pdf>; Canadian Arctic Resources Committee, *Mercury in Arctic Communities: Arctic Indigenous Peoples Key Issues for Consideration by the UNEP Global Mercury Assessment* (Submission to UNEP Chemicals, September 2001), available at <http://www.chem.unep.ch/mercury/2001-ngo-sub/sub2ngo-att1.pdf>.
[66] Grand Council of the Crees (Eeyou Istchee), *Environmental Methyl Mercury contamination in the James Bay territory of northern Quebec (Canada) and the Experience of the James Bay Crees* (Submission to UNEP Chemicals, August 2001), available at <http://www.chem.unep.ch/mercury/2001-ngo-sub/sub4ngo.pdf>.

step toward a global heavy metals convention. Canada, holding significant economic interests in mining, only accepted the CLRTAP Heavy Metals Protocol as the price for getting the simultaneously negotiated CLRTAP POPs Protocol, which was a top national policy priority. In contrast, the European Arctic countries are among the strongest supporters of international legal developments on mercury and other heavy metals.[67]

CONTINUING CHALLENGES AND EFFORTS

POPs exposure in the Arctic is continuing, and Arctic States and indigenous groups remain involved in abatement efforts.[68] In addition to the 16 POPs that are covered under the regional CLRTAP POPs Protocol and the 12 POPs regulated by the global Stockholm Convention, other chemicals that exhibit similar characteristics have been detected in the Arctic environment. For example, concentrations of PBDEs, compounds used as flame retardants, increased exponentially in Canadian Arctic seals between 1981 and 2000.[69] Perfluorooctanesulfonate, a chemical that has been extensively used as a fabric protector, has also been found in Arctic seals and polar bears.[70] This situation also gives rise to further human health concerns. As such, there is a need to further expand international regulations of POPs.

The CLRTAP POPs Protocol and the Stockholm Convention include separate mechanisms to add new substances to the two agreements. Candidate POPs must be reviewed by expert committees and fulfil specific criteria on long-range transport potential, persistence, bioaccumulation and toxicity. So far, no POPs have been added to either treaty, but negotiations are proceeding. The chemicals that had been proposed for inclusion in the CLRTAP POPs Protocol and the Stockholm Convention by 2007 are listed in Table 1, below. In 2005, the CLRTAP Executive Body agreed that perfluorooctanesulfonate and pentabromodiphenyl ether (one type of PBDE) were POPs.[71] In 2005, five additional substances – hexachlorobutadiene, octabromodiphenyl ether (another type of PBDE), polychlorinated naphthalene, pentachlorobenzene and short-chain chlorinated paraffins – were proposed. These were recognized as POPs by the Executive Body in 2006. The CLRTAP Parties are currently assessing management options for all of these chemicals.[72]

Eleven chemicals have been proposed for addition to the Stockholm Convention. Five of these have been recommended to the Conference of Parties for regulation: chlordecone, hexabromobiphenyl, lindane (a hexachlorocyclohexane preparation), pentabromodiphenyl ether and perfluorooctanesulfonate.[73] Another five substances were proposed in 2006: alpha-hexachlorocyclohexane and beta-hexachlorocyclohexane, octabromodiphenyl ether, pentachlorobenzene and short-chain chlorinated paraffins.[74] Four of these five substances have passed the initial review stage, and management options for risk reductions are currently developed and assessed. The remaining substance, short-chain chlorinated paraffins, was controversial because of a large number of continuing industrial uses, and will be re-evaluated again in 2008.[75] Most recently, the pesticide endosulfan was proposed for evaluation in 2007.[76]

The 2002 AMAP heavy metals report also urged stronger action on mercury pollution.[77] Yet AMAP's work was not without controversy, particularly with regard to the portrayal of mercury levels in the Yup'ik in western Alaska. A follow-up note to the summary report inserted language noting that the levels in the Yup'ik did not exceed Canadian mercury guidelines, and deleted references to the Yup'ik as people at increased risk of adverse health effects. This change subsequent to the publication of the report reflected a high level of sensitivity in the USA and Alaskan governments and among indigenous representatives to the portrayal of mercury contamination. AMAP experts moreover noted that reduced Arctic exposure

[67] See N.E. Selin and H. Selin, n. 63 above, at 265–266.

[68] B.M. Jenssen, 'Endocrine-Disrupting Chemicals and Climate Change: A Worst-Case Combination for Arctic Marine Mammals and Seabirds?' 114:S-1 *Environmental Health Perspectives* (2006), 76.

[69] M.G. Ikonomou, S. Rayne and R.F. Addison, 'Exponential Increases of the Brominated Flame Retardants, Polybrominated Diphenyl Ethers, in the Canadian Arctic from 1981 to 2000', 36:9 Environmental Science and Technology (2002), 1886.

[70] J.P. Giesy and K. Kannan, 'Global Distribution of Perfluorooctane Sulfonate in Wildlife', 35:7 *Environmental Science and Technology* (2001), 1339.

[71] United Nations Economic Commission for Europe, *Report of the Twenty-Third Session of the Executive Body* (ECE/EB.AIR/87, 27 January 2006).

[72] United Nations Economic Commission for Europe, *Report of the Executive Body on its Twenty-Fourth Session held in Geneva from 11–14 December 2006* (ECE/EB.AIR/89, 1 March 2007).

[73] United Nations Environment Programme, *Report of the Persistent Organic Pollutants Review Committee on the Work of its First Meeting* (UNEP/POPS/POPRC.1/10, 9 December 2005); M. Ashton, P. Kohler and O. Pasini, 'Summary of the Third Meeting of the Persistent Organic Pollutants Review Committee of the Stockholm Convention: 19–23 November 2007', 15:155 *Earth Negotiations Bulletin* (26 November 2007).

[74] United Nations Environment Programme, *Report of the Persistent Organic Pollutants Review Committee on the Work of its Second Meeting* (UNEP/POPS/POPRC.2/17, 10 November 2006).

[75] M. Ashton, P. Kohler and O. Pasini, n. 73 above.

[76] United Nations Environment Programme, *Endosulfan Proposal* (UNEP/POPS/POPRC.3/5, 29 August 2007).

[77] Arctic Monitoring and Assessment Programme, *AMAP Assessment 2002: Heavy Metals in the Arctic* (AMAP, 2002), at 137.

to mercury can only be achieved by cutting global emissions.[78] The UNEP Governing Council will revisit in 2009 the question of whether to negotiate a global mercury treaty.

The most recent AMAP assessments also addressed the influence of global climate change on POPs and heavy metal pollution.[79] Interactions between hazardous substances and climate change may affect the transport of contaminants to and within the Arctic through changes in temperature, precipitation and/or wind patterns. Climate-influenced changes in food webs and ecosystems can also affect human and wildlife exposure. The endocrine-disrupting properties of many of these substances could additionally interact with climate change, making it more difficult for species to adapt to an altered environment.[80] As such, decision makers are increasingly faced with the challenge of addressing multiple, interacting environmental, social and economic stresses on Arctic populations.[81]

CONCLUDING REMARKS

Chemical and heavy metal pollution and contamination continue to be critical international issues of great importance to Arctic indigenous groups. Hazardous substances were an early case where Arctic indigenous peoples played a significant role in shaping the outcome of circumpolar responses and international legal arrangements in a number of concrete ways. Indigenous groups participated actively in major scientific assessments, including Canada's Northern Contaminants Program and under AMAP, where they provided much relevant information (including indigenous or local knowledge). Indigenous groups prepared well-articulated statements and policy positions, and pressured national governments to act on hazardous substances. Representatives of indigenous groups also attended and advocated directly in a host of international political meetings and negotiations.

Participation by indigenous groups on hazardous substance work was facilitated by their position as permanent participants in the Arctic Council and the UN observer status of the ICC. Circumpolar activism also helped to build important connections and interests and to build identity among the indigenous peoples of the Arctic. At the same time, the active support for their involvement on POPs and heavy metals from Arctic States has been critical. Collaborative efforts have created new norms of inclusion of indigenous peoples, and have institutionalized rights of consultation and participation at multiple levels of decision-making. However, there are still important limitations to the independent authority and ability to act of indigenous groups, as is, for example, seen by the lack of voting rights of the permanent participants in the Arctic Council: States remain the only actors having sovereignty under public international law.

There are also continuing conflicts between Arctic indigenous groups and States. The UN General Assembly in September 2007 passed the Declaration on the Rights of Indigenous Peoples, setting out individual and collective rights for the world's 370 million indigenous peoples.[82] This was greeted as a 'day of joy' by Arctic indigenous peoples groups.[83] However, Canada and USA were among only four countries that voted against the Declaration, while Russia abstained.[84] The countries opposing the Resolution did so largely because of its language on the rights to land and natural resources and the self-determination of indigenous peoples. The Canadian Inuit leader Mary Simon commented after the Resolution's adoption: 'When you assert sovereignty in the Arctic you also have to recognize that the people that live there are asserting that sovereignty, so you have to recognize their human rights and their rights as a people'.[85]

Climate change is a rapidly growing Arctic issue where indigenous perspectives are also critical. In 2004, the Arctic Council and the International Arctic Science Committee released the Arctic Climate Impact Assessment.[86] This report identified climate change and Arctic environmental and human impacts as a major issue of circumpolar and global concern. The Arctic

[78] See Arctic Monitoring and Assessment Programme, n. 5 above, at ix.

[79] Arctic Monitoring and Assessment Programme, *The Influence of Global Change on Contaminant Pathways to, within and from the Arctic* (AMAP, 2003).

[80] See B.M. Jenssen, n. 68 above.

[81] J.J. McCarthy *et al*., 'Chapter 17: Climate Change in the Context of Multiple Stressors and Resilience', in Arctic Climate Impact Assessment, *Impacts of a Warming Arctic* (Cambridge University Press, 2004).

[82] United Nations General Assembly, *United Nations Declaration on the Rights of Indigenous Peoples*, (A/RES/61/295, 13 September 2007); UN Department of Public Information, *General Assembly Adopts Declaration on Rights of Indigenous Peoples* (GA/10612, 13 September 2007), available at <http://www.un.org/News/Press/docs/2007/ga10612.doc.htm>.

[83] C. Tesar, 'Arctic States Split on UN Declaration on Rights of Indigenous Peoples', *Arctic Peoples* (13 September 2007), available at <http://www.arcticpeoples.org/2007/09/13/arctic-states-split-on-un-declaration-on-rights-of-indigenous-peoples/#more-146>.

[84] The other two countries voting against the United Nations Declaration on the Rights of Indigenous Peoples were Australia and New Zealand.

[85] See C. Tesar, n. 83 above.

[86] See Arctic Climate Impact Assessment, n. 18 above; and A.E. Nilsson, *A Changing Arctic Climate: Science and Policy in the Arctic Climate Impact Assessment*, Linköping Studies in Arts and Sciences No. 386 (Linköping University, 2007).

Climate Impact Assessment was unique compared to most other climate change assessments in that it included active participation by indigenous peoples in both scientific and political processes. The report also addressed the vulnerability of Arctic communities to multiple, interacting stressors, including hazardous substances and societal change. In addition, the fourth assessment by the Intergovernmental Panel on Climate Change included a chapter on the polar regions in the report by the Working Group on Impacts, Adaptation and Vulnerability.[87]

It is likely that Arctic indigenous activism will increase further, not least because of the fundamental changes that are being brought on by extensive climatic changes. Indicative of this, the ICC, on behalf of 63 Inuit, filed a petition with the Inter-American Commission on Human Rights against the USA in 2005, arguing that its refusal to curb greenhouse gas emissions violated the human rights of the Inuit, citing heavily from the ACIA report.[88] A hearing was held by the Commission in March 2007 to investigate the relationship between climate change and human rights.[89] In addition, the UN in June 2007 awarded Sheila Watt-Cloutier, the former Chair of the ICC, the Mahbub ul Haq Award for Excellence in Human Development for her advocacy work.[90] Watt-Cloutier was also nominated for the 2007 Nobel Peace Prize, which was ultimately awarded jointly to the Intergovernmental Panel on Climate Change and Al Gore.

Finally, more constructive engagement of indigenous peoples in international politics is, of course, not only an important issue in the Arctic. There are approximately 5,000 indigenous groups worldwide, living in more than 70 countries on five continents. Many of the world's indigenous peoples are still struggling to make their voices heard and to have their interests and perspectives influence outside political, economic and legal decisions that frequently have direct and significant impacts on their daily lives. In this respect, the establishment and work of the Arctic Council could serve as an inspirational model for the design of more effective forms of collaboration between indigenous peoples and national governments on multiple issues – including climate change – in other regions, as well as globally.[91]

Henrik Selin is an Assistant Professor in the Department of International Relations at Boston University. His research focuses on global and regional politics and policy making on environment and sustainable development. He has published numerous journal articles and book chapters on international management of hazardous substances. Prior to his current faculty position, Dr Selin spent three years as a Wallenberg Postdoctoral Fellow in Environment and Sustainability at the Massachusetts Institute of Technology.

Noelle Eckley Selin is a postdoctoral associate with the Joint Program on the Science and Policy of Global Change and the Center for Global Change Science, Massachusetts Institute of Technology, where her research focuses on atmospheric pollution and human health impacts. Prior to her current position, she developed and evaluated a global, 3D atmospheric model of mercury pollution in the Atmospheric Chemistry Modeling Group at Harvard University. She has also published articles and book chapters on the interactions between science and policy in international negotiations, in particular focusing on global efforts to regulate hazardous chemicals.

The authors thank Sarah Busche for very valuable research assistance.

[87] Intergovernmental Panel on Climate Change, *Working Group II: Climate Change Impacts, Adaptation and Vulnerability* (Cambridge University Press, 2007), at 653.

[88] Center for International Environmental Law (CIEL), 'Inuit File Petition with Inter-American Commission on Human Rights, Claiming Global Warming Caused by United States is Destroying Their Culture and Livelihoods' (CIEL, 2005), available at <http://www.ciel.org/Climate/ICC_Petition_7Dec05.html>.

[89] Canadian Broadcasting Corporation (CBC) News, 'Human Rights Body Reconsiders Inuit Climate Change Petition' (6 February 2007), available at <http://www.cbc.ca/canada/north/story/2007/02/06/climate-hearing.html>.

[90] UN News Center, 'Inuit Leader Wins UN Award for Activism Against Climate Change' (20 June 2007), available at <http://www.un.org/apps/news/story.asp?NewsID=22973&Cr=climate&Cr1=change>.

[91] See T. Koivurova and L. Heinämäki, n. 27 above, at 105.