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Dangerous climate change and the importance of adaptation for the Arctic's Inuit population

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Abstract
The Arctic's climate is changing rapidly, to the extent that 'dangerous' climate change as defined by the United Nations Framework on Climate Change might already be occurring. These changes are having implications for the Arctic's Inuit population and are being exacerbated by the dependence of Inuit on biophysical resources for livelihoods and the low socio-economic–health status of many northern communities. Given the nature of current climate change and projections of a rapidly warming Arctic, climate policy assumes a particular importance for Inuit regions. This paper argues that efforts to stabilize and reduce greenhouse gas emissions are urgent if we are to avoid runaway climate change in the Arctic, but unlikely to prevent changes which will be dangerous for Inuit. In this context, a new policy discourse on climate change is required for Arctic regions—one that focuses on adaptation. The paper demonstrates that states with Inuit populations and the international community in general has obligations to assist Inuit to adapt to climate change through international human rights and climate change treaties. However, the adaptation deficit, in terms of what we know and what we need to know to facilitate successful adaptation, is particularly large in an Arctic context and limiting the ability to develop response options. Moreover, adaptation as an option of response to climate change is still marginal in policy negotiations and Inuit political actors have been slow to argue the need for adaptation assistance. A new focus on adaptation in both policy negotiations and scientific research is needed to enhance Inuit resilience and reduce vulnerability in a rapidly changing climate.

Keywords: climate change, Inuit, adaptation, mitigation, dangerous climate change, Arctic, climate policy

1. Introduction

It is beyond doubt that the Arctic climate is changing (IPCC 2007b, Lawrence *et al* 2008, Rinke and Dethloff 2008, Serreze *et al* 2007, Walsh 2008). Temperatures are increasing at twice the global average, recent years have witnessed an unprecedented reduction in summer sea-ice cover, and extreme weather conditions are more frequent and intense (Barber *et al* 2008, Comiso *et al* 2008, Corell 2006, Graversen *et al* 2008, IPCC 2007b, Moline *et al* 2008, Perovich *et al* 2008). While some of this change is undoubtedly due to natural cycles, a causal link with human emissions is now well established (IPCC 2007b, Min *et al* 2008, Stroeve *et al* 2007). These changes are having implications for the Arctic's Inuit population (figure 1), the majority of whom live in small, remote, coastal communities, and continue to depend on the harvesting of renewable resources for livelihoods (AHDR 2004). This high dependence on the environment has made them particularly susceptible to climate change (ACIA 2005, Ford and Furgal 2009, Furgal and Prowse 2008, IPCC 2007a).

Figure 1. The circumpolar in distribution of Inuit, inhabiting Arctic regions of Canada, Alaska (US), Greenland (Denmark), and Chukotka (Russia).

Compromised food security and health status, loss of life and serious injury, and inability to practise traditional cultural activities, have been documented in all Inuit regions and can be expected to continue as the climate changes (ACIA 2005, Ford *et al* 2008a, Ford *et al* 2006, Furgal and Seguin 2006, Hovelsrud *et al* 2008, Huntington *et al* 2007a, 2007b, Huntington 2009, Krupnik and Jolly 2002, Krupnik and Ray 2007, Loring and Gerlach 2009, Nickels *et al* 2006, Pearce *et al* 2009b, 2009a, White *et al* 2007). Increasing sea levels, coastal erosion, and permafrost thaw are also threatening the viability of some settlements, damaging important heritage sites, and compromising municipal infrastructure and water supply (Alessa *et al* 2008, Couture and Pollard 2007, Larsen *et al* 2008, Lynch and Brunner 2007, Martin *et al* 2007). Benefits have also been noted but the balance of impacts is believed be negative (ACIA 2005, IPCC 2007a), to the extent that Inuit organizations have argued that human rights are being violated (Crump 2008, ICC 2005, Martello 2008). More generally, the disproportionate impacts of climate change on Inuit relative to their contribution to the problem raises a number of environmental justice concerns as documented by Trainor *et al* (2007).

Given the risks posed by climate change in the Arctic, the global response to the problem is important for Inuit; today's policy decisions will determine the viability of communities and livelihoods across the Arctic. More generally, the Inuit experience is highly relevant for vulnerable peoples globally (Crump 2008, Nilsson 2008). As one of the first regions to experience climate change, climate policy developments in an Arctic context will set important global and national precedents. Here, I highlight how international human rights obligations and climate change treaties establish a strong case for action on climate change by States with Inuit populations and the international community at large. I argue that policy to stabilize and reduce greenhouse gas emissions is urgent if we are to avoid runaway climate change but unlikely to prevent changes which will be dangerous for Inuit. This leads to my central argument which is that adaptation needs to be the forefront of climate policy in northern regions. I finish the paper by outlining general principles essential for successful adaptation policy development.

2. The Arctic's Inuit population

Inuit are indigenous peoples inhabiting Arctic and sub-Arctic regions of Canada, Alaska, Greenland (a country within the Kingdom of Denmark), and Chukotka (Russia). Worldwide there are approximately 165 000 people who identify themselves as Inuit: 51 000 in Canada, 55 000 in the US, 50 000 in Greenland, 7000 in Denmark, and 1700 in Russia (Young and Bjerregaard 2008). Together, Inuit administered and inhabited regions cover a vast and sparsely populated area including the coast of the Chukotka peninsula in eastern Siberia, the western and northern coasts of Alaska, the Arctic coastline and Arctic archipelago of Canada, and the west and east coasts of Greenland (figure 1). In Canada alone, Inuit administered areas cover 31% of the Canadian landmass (an area larger than Western Europe) with an average population density of 0.014 people km^{-2}. The climate of the Arctic is extreme, characterized by very cold, long winters and short, cool summers. Sea-ice is an integral part of Inuit life in all regions of the Arctic, providing an important transportation link between communities, with few permanent paved roads in Inuit regions. The ice also provides a platform for culturally and economically important resource harvesting activities.

The majority of Inuit who reside in the Arctic live in small, remote, coastal communities, with economies composed of waged employment and subsistence harvesting (AHDR 2004, Poppel *et al* 2007). The waged economy is largely based on public administration and resource extraction (including mining, oil and gas, and fishing), with tourism also important in some regions. Many Inuit retain a close and intimate relationship with the environment and a strong knowledge base of their regional surroundings, with traditional foods derived from hunting having social and cultural importance across the Inuit regions (Poppel *et al* 2007). Hunting and fishing also continue to supply principal elements of Inuit diet, despite increasing consumption of store foods noted in recent decades (Kuhnlein *et al* 2008, Loring and Gerlach 2009, Young and Bjerregaard 2008). In surveys in the Canadian territory of Nunavut, for instance, 41% of Inuit respondents identified that more than half of the meat and fish they consumed was locally harvested (Poppel *et al* 2007). The health benefits of consuming traditional foods are widely acknowledged (Van Oostdam *et al* 2005). This dependence on the biophysical environment, however, has made Inuit particularly susceptible to changing climatic conditions.

Social, economic, and demographic characteristics of Inuit communities often mirror those in developing nations.

Communities are challenged by limited access to health services, low socio-economic status, high unemployment, crowded and poor-quality housing, concerns regarding basic services such as drinking water quality, and low educational achievement, although there are also significant disparities between and within Inuit regions (AHDR 2004, Bjerregaard *et al* 2004, NTI 2008, Senécal and O'Sullivan 2006, Young and Bjerregaard 2008, Young 2008, Young and Mollins 1996). Consequently, Inuit health status is often lower than the general population of the nations in which they reside. In Canada, for example, Inuit men can expect to live 64.4 years compared to a Canadian average of 77.0; the figures for women are 69.8 years and 82.0 years (Statistics Canada 2006, 2008). Similarly in Greenland, life expectancy is 70 years for women and 65 years for men, compared to Denmark where the average is 80.59 and 75.8 (Statistics Greenland 2007). The Arctic's Inuit population is also a young population. The median age for Alaskan Inuit, for instance is 22 compared to 35 for the US as a whole, and in Canada in the 2001 census 41% of Inuit were under the age of 15 compared to 19% among Canadians in general (StatsCanada 2002, US Census Bureau 2000). This creates unique challenges for Inuit regions including the provision of health care, education, social services, and has implications for future social and economic development.

Inuit across the Arctic have experienced sweeping socio-cultural-economic changes in the twentieth century, with industrialization of the Arctic, the sedentarization of former semi-nomadic hunting groups to permanent settlements, and, more recently, integration into the globalized economy (AHDR 2004). In many regions, Inuit livelihoods were transformed within a generation with the introduction of the waged economy, imposition of western governance and legal system, development of hunting regulations, compulsory schooling, and rapid population growth. It should also be noted that considerable variation in the speed, timing, and nature of change exists across the regions and between communities. Chronic problems affecting many Inuit settlements, including high suicide rate, substance abuse, and addiction, have been attributed to rapid change and associated acculturative stress (AHDR 2004, Bjerregaard *et al* 2004, Curtis 2005, Young and Bjerregaard 2008). It against this backdrop that Inuit will experience and respond to a changing climate.

3. Climate change obligations

As the impacts of climate change have become apparent in Arctic regions, Inuit political leaders have argued that climate change is a fundamental human rights issue. In 2005 for instance, the Inuit Circumpolar Conference (ICC)—on behalf of Inuit in Canada and the US—lodged a 'petition' at the Inter-American Commission on Human Rights (IACHR) seeking 'relief from human rights violations resulting from the impacts of climate change caused by acts and omissions of the United States with respect to greenhouse gas emissions' (ICC 2005). The petition appealed to international law established under the Organization of American States, arguing that subsistence culture is central to Inuit identity and is being damaged by climate change. As Crump (2008) notes, this action was not a 'lawsuit', in that Inuit were not seeking financial compensation but wished to demonstrate a link between climate change and their rights. Redress sought in the petition called for the United States to adopt measures to reduce emissions, work towards global limits, and work with Inuit to protect culture and resources in the context of a rapidly changing climate (ICC 2005). While the petition was rejected 'without prejudice' in 2006 due to the inability of the Commission to determine if human rights were being violated, the case in all likelihood represents a portent of future action as nations and groups adversely affected by climate change seek legal redress (Caney 2008, Maldives 2008). Moreover, it has raised the issue of climate change as a major threat facing Inuit and indigenous peoples more generally.

States with Inuit populations also have obligations under international human rights treaties to which they are Parties (table 1). Of particular interest here are indigenous peoples' special rights which further emphasize obligations of Parties to uphold the right of indigenous peoples to enjoy culture, considered to include a 'particular way of life associated with the use of land resources', (HRC 1994). For Inuit, 'land resources' also include the sea-ice, which is recognized as an extension of Inuit lands and is changing rapidly with Arctic warming. Clearly, these obligations have relevance in the context of climate change (table 1), with evidence now indicating beyond reasonable doubt that anthropogenic climate change is damaging Inuit livelihoods and cultural resources (ACIA 2005, IPCC 2007a). Indeed, the science demonstrating the link between climate change and human impacts has advanced significantly since the rejection of the ICC petition in 2006. An interesting case in this regard is a suit filed by the Inupiat community (Inuit of Alaska's North-west and North Slope Borough) of Kivalina, Alaska, to the US federal court claiming costs to relocate the community due to rapid rates of coastal erosion (Barringer 2008). The suit, filed against oil and coal companies and electric utilities, will be able to draw on a significant body of research linking accelerated coastal erosion and climate change impacts in the Arctic to human emissions.

The United Nations Framework Convention on Climate Change (FCCC), and its principal update the Kyoto Protocol, also establish obligations for Parties to take action on climate change. Article 2 of the FCCC, for example, obligates Parties to 'achieve . . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. Scientific research and observations of Inuit lead credence to the designation of climate change in the Arctic as currently 'dangerous': environmental indicators for safe hunting and travel are no longer reliable, thereby increasing the risks of engaging in traditional activities; sea level rise, increased storm activity, and melting permafrost have damaged cultural sites, displaced communities, and resulted in the loss of traditional lands; the availability and quality of some traditional foods have decreased, with implications for health and well-being; and there is evidence that wildlife health and populations are being negatively affected (ACIA 2005, Adger *et al* 2009, Alessa *et al* 2008, Folkestad *et al* 2005, Ford and Furgal 2009, Ford *et al* 2008b, Furgal and Prowse 2008, Furgal and

Table 1. International human rights treaties and their relevance to climate change for States with Inuit populations who are Parties.

Human rights convention/treaty	Parties	Relevance to climate change
UN Universal Declaration of Human Rights (1948)	Canada, Russia, Denmark, US	Basic social, cultural, economic rights and universality of these rights
International Covenants of 1966 on Economic and Social and Cultural Rights (ICESCR) and on Civil and Political Rights (ICCPR)	Canada, Russia, Denmark, US	Right to pursue economic, social and cultural development Right to safe and healthy working conditions Right to own means of subsistence Right to adequate standard of living including adequate food, clothing and housing,
ILO Indigenous and Tribal Peoples Convention (1989)	Denmark	Coordinated action to protect the rights of indigenous peoples Respect special importance of the cultures of indigenous peoples Safeguard rights to the natural resources pertaining to lands Protection against removal from traditional lands
UN Declaration on the Rights of Indigenous Peoples (2007)	Denmark	Right to life, physical and mental integrity, liberty and security Sate obligation to prevent and redress action affecting integrity of indigenous peoples as distinct peoples Right to maintain and protect culture Right to secure enjoyment of their means of subsistence

Seguin 2006, Guyot *et al* 2006, Henshaw 2007, Krupnik and Jolly 2002, Loring and Gerlach 2009, Moore and Huntington 2008). Moreover, the debate about whether climate change is currently 'dangerous' for Inuit is likely to become irrelevant in the coming decades, particularly if climate change continues unabated. As Lenton *et al* (2008) illustrate, the Arctic is sensitive to even small changes in climatic conditions due to significant changes in climate already experienced and sensitivity of biophysical systems. A tipping point, they argue, could soon be exceeded—a scenario which would result in irreversible changes with wide ranging implications for biophysical and human systems. Arctic sea-ice may already be close to exceeding such a tipping point, with the rapid decline in summer sea-ice extent in recent years catching the scientific community by surprise (Comiso *et al* 2008, Lawrence *et al* 2008, Perovich *et al* 2008, Stroeve *et al* 2007). Projected changes in climate will undoubtedly bring benefits for Inuit regions; more open water in the summer, for example, will increase opportunities for oil and gas development, mining, and improve transportation access (Huntington *et al* 2007a, 2007b, Nuttall 2008, Stewart *et al* 2007). If the present day trends are a guide, however, the negative impacts of climate change on social, cultural, physical, and mental well-being will outweigh the benefits (IPCC 2007a).

4. Emissions centred policy

The focus of political action and lobbying by Inuit—and more generally the scientific and NGO community—has been to draw attention to the plight of northern peoples in a changing climate and argue for remedial action by those nations most responsible to stabilize and reduce greenhouse gas emissions (ICC 2005). Politically, the concentration on mitigation is logical given the commitment of Parities to the FCCC and Kyoto Protocol to take action on greenhouse gases. Above all, mitigation is important in an Arctic context because climate change could have irreversible negative impacts for Inuit (Folkestad *et al* 2005, Corell 2006, Lenton *et al* 2008). To the extent that problems faced by Inuit are understood by global leaders, policy makers, and the public in general, Inuit lobbying has been successful, and can been viewed more broadly as an attempt by Inuit to regain control and influence over their lives. Indeed, as Martello (2008) notes, Arctic indigenous peoples (particularly Inuit) are becoming an increasingly vocal and visible feature of global climate change discourse. From the perspective of emission control, however, it has had little if any impact on global emissions.

Mitigation should continue to be pursued as an objective for action on climate change. Lower emission futures will give Inuit and the ecosystems on which they depend more time to adapt and reduce the likelihood that changes will be dangerous (Folkestad *et al* 2005, Schellnhuber 2008). Efforts to reduce greenhouse gas emissions, particularly the development of renewable energy, can also decrease susceptibility to climatic risks. However, the focus primarily on mitigation in policy debates on Arctic climate change, to the neglect of other response options, is misplaced (Budreau and McBean 2007, Ford *et al* 2007, Newton *et al* 2005). Firstly, it is now accepted that some degree of climate change is inevitable, even if atmospheric concentrations of greenhouse gases are dramatically curtailed (IPCC 2007b). Ramanathan and Feng (2008) for example, estimate that the planet is already committed to a warming of 2.4C compared to pre-industrial surface temperatures due to historic emissions; such warming will have wide ranging implications in the Arctic (May 2008). Indeed, as Schellnhuber (2008, p 14239) notes, the likelihood that global temperatures will exceed the 2C threshold many believe will herald dangerous climate change, is 'frustratingly high'. Moreover, it is widely recognized that climate change impacts are already occurring in the Arctic, with many effects occurring faster than previously predicted and to which Inuit populations are vulnerable (Comiso *et al* 2008, Ford *et al* 2009, IPCC 2007a, Laidler *et al* 2009, Serreze *et al* 2007, Stroeve *et al* 2007). Mitigation cannot prevent these changes or significantly reduce Inuit vulnerability. In this context, a shift in priorities for climate change action is needed—a shift that emphasizes the importance of adaptation as a means of protecting and strengthening Inuit livelihoods in a rapidly changing Arctic.

5. A new policy discourse

> 'Countries need to invest in adaptation to climate change . . .. Moreover, a new science and profession of climate change adaptation must be encouraged given the scale of the change and dislocation that lie ahead.'
>
> Jeffrey Sachs (2008, p108)

Adaptation seeks to develop measures to reduce or moderate the negative effects of climate change and take advantage of new opportunities, and figures in the FCCC. Article 4.1b commits Parties to 'formulate, implement . . . national and where appropriate, regional programmes containing measures to . . . facilitate adequate adaptation to climate change', a commitment re-affirmed in the Kyoto Protocol. However, despite the prominence of adaptation in climate treaties, and the important role it could play in moderating the impacts of climate change, it has historically been neglected in policy negotiations including those concerning the Arctic (Burton 2006, Burton *et al* 2002, Ebi and Semenza 2008, Ford *et al* 2007, Huq *et al* 2003, Klein *et al* 2005, Pielke *et al* 2007, Smit and Wandel 2006). A number of reasons can be advocated for this neglect, including concerns that adaptation may distract from mitigation, the complexity of developing policy to support adaptation, and difficulty in setting targets and measuring progress (Ford 2008, Huq *et al* 2003, 2005, Pielke *et al* 2007).

In recent years, with the realization that we are committed to some degree of climate change, adaptation has re-entered policy discussions (Pielke *et al* 2007, Costello *et al* 2009). Some have even argued that dangerous anthropogenic interference with the climate system is inevitable regardless of mitigation strategies due to historic emissions (Ramanathan and Feng 2008, Schellnhuber 2008) and combined with future emissions trajectories makes adaptation too important to ignore (Ebi and Semenza 2008). Even activists who have argued that focusing on adaptation is tantamount to abdicating mitigation responsibilities (including Al Gore) are now supporting the need for action. Importantly, adaptation in the FCCC was recently re-affirmed at the Conference of the Parties (CoP) meeting in Bali 2007, with calls for the provision of financial resources to support adaptation and assess adaptation needs.

For the Arctic's Inuit population, adaptation offers a tangible way in which dangerous climate change can be potentially avoided and livelihoods protected. Realistically, it offers the only means of achieving these goals given the absence of political will globally to stabilize emissions at a level that will prevent significant change in the Arctic climate system, or even the possibility of preventing such change.

6. Adaptation action for the Arctic

Adaptation science—which seeks to identify opportunities for adaptation support—is an emerging field of policy research (Adger 2006, Ebi and Semenza 2008, Ford and Smit 2004, Füssel and Klein 2006, Huntington *et al* 2007a, 2007b, O'Brien *et al* 2007, Smit and Wandel 2006, Turner *et al* 2003). A number of adaptation entry points have been suggested in the general literature, ranging from identifying specific actions for moderating the impacts of climate change to the identification of systemic changes necessary to create an enabling environment for adaptation (Agrawala and van Aalst 2008, Huq *et al* 2005, Keim 2008, Kok *et al* 2008, Lemmen *et al* 2008, Pielke *et al* 2007, Schipper and Pelling 2006). In Inuit regions too, research has recommended specific policy options, including supporting the teaching and transmission of traditional skills, enhancing and reviewing emergency management capability, revisiting land claims agreements, promoting the co-management of resources, technological transfer, economic support to facilitate adaptation, and infrastructure protection, alongside adopting broader principles of adaptive management (Budreau and McBean 2007, Ford *et al* 2007, Pearce *et al* 2009b, 2009a). However, this research is largely confined to North America, and limited to specific regions and sectors.

More research on adaptation for Inuit regions is required and is a priority for future research action: there is a substantial adaptation deficit in the Arctic in terms of what is currently known and what is needed (Ford and Furgal 2009). A number of generalizations can be made, however, concerning what is required for successful adaptation. *Firstly*, in a globalized world, adaptation barriers and opportunities exist on multiple levels and addressing these will require actions covering a range of scales and issues (Keskitalo 2008a, 2008b, O'Brien *et al* 2007, O'Brien and Leichenko 2000). *Secondly*, adaptation support will often require significant financial investment in the short term. In many instances, benefits will be realized immediately through reduced sensitivity to existing climatic risks, although benefits for some adaptations will be realized only in terms of avoided future impacts (IPCC 2007a, Keim 2008, Klein *et al* 2005, Schipper and Pelling 2006, Stern 2007). In this context some have argued that resources currently expended on climate change should be directed to more pressing issues (Lomborg 2004, 2008), yet this is ill-advised as climate change will exacerbate existing problems including poverty, low socio-economic development, and unequal access to resources (Costello *et al* 2009). *Thirdly*, the costs and difficulties of adapting will increase significantly over time if action is not taken (Stern 2007, Stern and Taylor 2007). *Fourthly*, adaptation will require policy to focus on risk prevention and preparedness to reduce susceptibility to climatic extremes and change, risk response to increase capacity for dealing with dangerous conditions when they occur, and recovery to enable a rapid return to normal after an extreme event (Füssel and Ebi 2008, Keim 2008, Schipper and Pelling 2006). Such policies are important to reduce current climatic risks in Inuit regions and can also be integrated into broader policy objectives surrounding social, economic, and cultural development (Agrawala and van Aalst 2008, Ebi and Semenza 2008, Frumkin *et al* 2008, Keim 2008, Kok *et al* 2008, Louis and Hess 2008) and even create pathways out of chronic poverty (Tanner and Mithcell 2008). Indeed, it is important that these broader benefits are fully exploited and promoted, part of what Dovers (2009, p 4) terms the 'normalization' of adaptation, and Giddens (2009, p 8)

'convergence' of policy goals. *Finally*, Inuit communities and regions will not be able to fully adapt unless financial support is provided by larger scale actors (Ford *et al* 2007).

The history of action being taken to uphold Inuit rights and protect livelihoods is, however, poor—the rights of indigenous peoples are often neglected (Damman *et al* 2008, Nilsson 2008). Moreover, there are few international venues where Inuit can seek redress for neglect of States' obligations because, as non-state actors, they are not themselves Parties to human rights or climate change treaties, but represented by the States in which they reside (Budreau and McBean 2007, FIELD 2008). At best, States with Inuit populations have been reluctant to support climate change action on behalf of Inuit; at worst, these issues have failed to make the political agenda. This contrasts with the comparably vulnerable Small Island Developing States (SIDS), which have argued the need for climate change action on behalf of their inhabitants and, as developing nations, are able to access adaptation support through the FCCC (Maldives 2008). Based on socio-economic indicators, many Inuit regions would classify as 'developing' if they were States (AHDR 2004, Senécal and O'Sullivan 2006, Trainor *et al* 2007), will experience similar constraints in adapting to climate change, and are experiencing unprecedented changes in climate. Indeed, as Trainor *et al* (2007) note, indigenous peoples of the Arctic will largely be 'losers' with climate change, bearing disproportionate impacts relative to their contribution to the problem. There is a need, therefore, for adaptation assistance to be provided through a relevant international body that is accessible to high risk groups regardless of where they reside; a vulnerable peoples' adaptation fund is overdue. Despite this need, discussion of adaptation assistance through the FCCC has focused predominantly on developing nations that will be most affected by climate change (e.g. Adger *et al* 2006, Huq 2006, Muller 2002, Patt *et al* 2008).

7. Discussion

The taboo on adaptation—which has constrained discussion about how to respond to climate change for over a decade—is beginning to lift (Pielke *et al* 2007). This cannot come soon enough. In the coming years the future of climate change policy will be negotiated at the Conference of the Parties meetings to the FCCC, and adaptation needs to be high on the agenda. Adaptation is needed to protect livelihoods in a changing climate and reduce the likelihood that climate change will be dangerous. Acting now on adaptation can bring near-term benefits, reduce current climate vulnerability, and target socio-economic policy objectives alongside managing the effects of future climate change. Pushing adaptation onto the policy agenda, however, will require significant effort by political actors, the scientific community, and public in general.

In this paper I have argued for a new policy discourse focusing on adaptation for Inuit regions. In making this normative statement, however, I—as a non-Inuit scientist based at a university in southern Canada—risk defining policy objectives and discussing *importance* in relation to a worldview different from that of Inuit themselves. Nevertheless, what I have aimed to do in this paper is synthesize findings from research in both the social and biophysical sciences, and community based research including my own, to indicate that adaptation is necessary, needs to be pursued today, and can address multiple policy goals. By linking this research to human rights and legal obligations of States in which Inuit reside, I have also outlined opportunities available to Inuit political actors to pursue adaptation support. Ultimately, however, developing policy priorities is inherently a political decision for decision makers and communities; science can act as a key resource for facilitating such decisions (Pielke 2008).

Political action and lobbying by Inuit political actors (including Inuit politicians, politicians representing Inuit in regional and national governments, Inuit organizations)—and supported by the NGO and science community—remains dominated by a focus on illustrating the impacts of climate change and arguing for mitigation. This is insufficient in light of the vulnerability of Inuit populations, current experience of climate change, and future climate change projections. However, there is emerging evidence that Inuit political actors and organizations are increasingly interested in promoting adaptation. The Government of Nunavut, for instance, is currently developing an adaptation plan, one of the first formalized plans at this level of government in North America (Arvai and Gregory 2007), while climate change plans elsewhere in Arctic Canada and Alaska contain broad statements on the importance of adaptation (Alaska State Legislature 2008, GNWT 2007). Organizations representing Inuit including the Inuit Circumpolar Conference (ICC), Inuit Tapiriit Kanatami (ITK) and the Alaska Federation of Natives have also noted the importance of adaptation in publications and speeches (AFN 2008, ICC 2005, ITK 2005, 2008, Nickels *et al* 2006, Watt-Cloutier *et al* 2005). The success of Inuit political actors in profiling the impacts of climate change on an international level indicates substantial political leverage which could be utilized to argue the importance of adaptation and work towards developing support mechanisms. This would not only benefit Inuit populations but would set an important precedent from which vulnerable peoples globally would benefit.

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