

Adaptation, industrial development and Arctic communities

Project Leader

Keeling, Arn (Memorial University of Newfoundland)

Network Investigators

Emilie Cameron (Carleton University); John Sandlos (Memorial University of Newfoundland); Frank Tester (University of British Columbia)

Collaborators and Research Associates

J. Tamalik McGrath (Independent Contractor); Jean-Sébastien Boutet (Nunatsiavut Government); Terre Satterfield (University of British Columbia)

PhD Students

Dawn Hoogeveen (University of British Columbia), Warren Bernauer (York University)

MSc Students

Tyler Levitan, Andrew Williams (Carleton University); Roshni Caputo-Nimbark, Tara Cater, Heather Green, Scott Midgley (Memorial University of Newfoundland); Karina Czcwski, Tee Lim (University of British Columbia)

Undergraduate Students

Drummond Lambert (University of British Columbia)

Abstract

This project is engaging in community-based, historical, and comparative research into industrial development as a driver of social, cultural and environmental change in the Canadian Arctic. In particular, researchers are exploring the cultural, economic and environmental impacts of past and present mineral exploration and development in several Arctic communities, including: Kugluktuk (Coppermine) in the Kitikmeot region, Qamani' tuaq (Baker Lake) and Kangiqiniq (Rankin Inlet) in the Kivalliq region, and Ikpiarjuk (Arctic Bay), site of the Nanisivik mine in the Qikiqtani Region. Research has also been conducted relating to the Polaris mine and the nearby community of Resolute. Working with community researchers, this project intends to identify issues of importance in relation to mining development and community change, and to explore community adaptations to the changes brought by industry. Researchers have collected extensive archival records relating to the history of industrial development in the Arctic, and will relate this history to changing government social and economic policies in the region, such as Inuit resettlement.

This research seeks to understand how current debates and controversies over mining development reflect Inuit experiences and knowledge of previous developments. This project will also contribute to the building of both northern and southern research capacity, by providing research experiences for graduate students, postdoctoral researchers and community members. In addition, through conferences, workshops and joint publications with European researchers and other Canadian research networks, this project is furthering an international network of scholars interested in environmental, economic and cultural change in the circumpolar Arctic. The results provide a locally relevant, community record of this knowledge and history, as well as information useful for communities and policy makers in assessing the potential benefits and impacts of current development proposals.

Key Messages

- Historical industrial development has driven important social, economic and environmental changes in the Arctic
- Industrial development in the Arctic continues to be dominated by mineral-extractive activities
- Both Inuit and non-Inuit communities are affected by boom-and-bust cycles of development associated with mineral extraction
- Contemporary assessment of mines must account for past experiences and understandings of work, its relation to traditional practices and knowledges, and relations with histories of colonization and dispossession
- Institutional structures through which extraction is assessed and governed in Nunavut have limitations regarding knowledge production, allocation of revenue streams, accounting for community concerns, and meeting objectives of the Nunavut Land Claim Agreement
- Certain mineral developments have the potential for environmental effects that adversely affect subsistence activities and threaten community well-being
- Participatory and community-based research methods are an important development in research with Indigenous peoples, but there are critical questions to pose of these methodologies and their implications

Objectives

- To document Inuit knowledge, experiences and memories of socio-cultural and environmental changes associated with minerals-based industrial development
- To study processes and impacts associated with past and present mineral development and resettlement in Arctic regions, including the effects of mine closure

- To identify relevant indicators of environmental and social vulnerability and adaptation associated with industrial development
- To develop insights into the intersections of industrial and economic change, and climate vulnerability and adaptation

Introduction

The rapid growth of mineral exploration and development activity is reshaping the economic and social geography of the Canadian Arctic and, in concert with other drivers of social and environmental change, transforming the territory. From a low in the early-2000s (after the closure of Nunavut's two operating mines), the mining industry now constitutes a large proportion of the territorial economy. Between 2010 and 2012, mineral exploration and development expenditures surged from \$256 million to a forecast of over \$568 million (NRCan 2012). This period also saw the opening of the Agnico-Eagle Meadowbank gold mine near Baker Lake, which will soon be succeeded by the company's Meliadine gold mine near Rankin Inlet, now under construction. There are also several major new developments on the horizon, such as the mega-project mines Mary River on north Baffin Island and Kiggavik near Baker Lake. The Nunavut government predicts that the mining sector alone could create 1500 new jobs for Inuit and eventually account for 12% of the territorial workforce (Nunavut, Department of Economic Development and Transportation 2009).

Mining has thus become a complex and still poorly understood driver of both economic and socio-cultural change. This project is undertaking community-based, historical and comparative research into Arctic industrial development. Through studies based on fieldwork in mining-affected communities and archival research into the legal and policy frameworks surrounding mineral development, our research team aims to inform debates and policy-making efforts surrounding the rapid industrialization of Arctic

regions. The focus of this work is on three Nunavut communities currently encountering large-scale mineral exploration and development activities in their vicinities: Kugluktuk (Coppermine) in the Kitikmeot region, Qamani' tuaq (Baker Lake) and Kangiqiniq (Rankin Inlet) in the Kivalliq region. In addition, we have extended our research to a fourth community, Arctic Bay (Ikpiarjuk Tununirusiq), where we have examined the legacies of the former Strathcona Sound (Nanisivik) lead-zinc mine.

At each of the project field sites, current or proposed developments present both opportunities and uncertainties related to work, economic development, social and cultural change, and environmental impacts. While these developments are taking place under enhanced regulatory regimes and with increased opportunities for local benefits (from royalties, employment or Impact Benefit Agreements), some of the proposed projects remain controversial.

The engagement of each of these communities with contemporary development is informed by experiences with previous rounds of mineral exploration and/or development, as well as with government "modernization" efforts more generally (McPherson 2003). Our research explores those historical experiences and considers how they inform contemporary reactions of people in the region to new developments. This retrospective assessment of mineral development and closure provides insight into processes of Inuit adaptation to rapid socio-economic change (Bernauer 2011). In addition, our project examines aspects of the contemporary political economy of mining in Nunavut (as the territory grows increasingly dependent upon mineral revenues and employment), as well as community responses to and engagements in mineral project review processes.

By tackling these critical issues, this project contributes to a broadening of the concept of "adaptation" to change by: understanding Inuit adaptations to rapid social, cultural and environmental changes (especially in the evolving relations between "traditional" activities and waged employment,

or what is known as the “mixed economy”); investigating the physical and cultural legacies of these changes for socio-ecological systems; and exploring the ways in which traditional knowledge, memories and experiences of past changes continue to shape contemporary community responses to new developments.

Activities

This list of activities combines the activities of the four NIs as well as students and research assistants over the course of 2012-13. It is presented broadly in sequence of the different NI-directed initiatives, rather than chronologically, hence there may appear to be overlap or similarities. Where appropriate, individuals carrying out or participating in the research activity are identified.

General project activities:

- Research license renewal and reporting to Nunavut Research Institute.
- Prepared and submitted draft Chapter 7 of IRIS-1 report, Western and Central Arctic, “Future mining” (EC AK).
- Prepared and submitted outline Chapter 3 of IRIS-2 report, Eastern Arctic, “Mineral development in the Eastern Arctic” (final submission in February 2013) (AK).
- Presentation and participation at ArcticNet Regional Science Meeting, Iqaluit, November (AK).
- Submission of book prospectus for edited volume titled Mining and Communities in Northern Canada (Sandlos and Keeling, eds.) to the University of Calgary Press’ Canadian History and Environment Series, a peer reviewed open access book series published in partnership with the Network in Canadian History and Environment (NiCHE). Six projected chapters in this volume are results of ArcticNet research.

- Sandlos and Keeling return first round of editorial comments to Mining and Communities book project authors in December 2012; second drafts of chapters due March 2013.
- Research and writing (Keeling and Sandlos) for book chapter, “Canada’s Mining Legacy and the Challenge of Sustainability,” invited contribution to Graeme Wynn and Colin Coates (Eds.), The Nature of Canada (University of British Columbia Press, expected 2014).
- NI Tester is editing (with Sylvie Blangy (Centre D’Ecologie Fonctionnelle et Evolutive, Montpellier, France) a special edition of Études/ Inuit Studies Journal on ‘Industrial Development and Mining Impacts’ (37:2) due out in late 2013. The volume will contain several papers by project researchers, including: Frank Tester and Drummond Lambert, ‘A State Point of View: Employing Inuit at the Nanisivik Mine’; Tee Lim, Terre Satterfield and Frank Tester, ‘The Social Dimensions of Mine Closure: Lessons from Nanisivik, Canada’s First High Arctic Mine’; and Tara Carter and Arn Keeling, “‘That’s where our future came from’”: Community experiences of historical and contemporary development in Rankin Inlet, Nunavut.
- NI Tester, Shirley Tagalik and 12 Inuit Elders were awarded the Arctic Inspiration Prize at the ArcticNet ASM in December 2012. This award of \$240,000 to the ‘IQ Team’ will be used to further the work of recording the history and Inuit Qaujamatukgangit of these Elders (from communities all over Nunavut) and the communication of this information and experience to Inuit youth.

Activities by project/region:

1. Rankin Inlet: historical and ethnographic research on mining in Kivalliq Region (Keeling, Cater).

- Preparation and translation of community report on Rankin Inlet Mining History project.

- Preparation of transcripts of oral history interviews for return to Rankin Inlet (see Polar Data Catalogue CCIN #11230).
- Consultation with Edward Atkinson, Nunavut Territorial archivist, on relevant holdings of the GN Archives. Mr. Atkinson shared several VHS and super 8 films from Kenneth Whatmough Fonds related to development of Rankin Inlet mine.
- Consultation with Beth Greenhorn, web services division, Library and Archives Canada, on digitized photographic holdings related to Rankin Inlet and Kivalliq region. Nearly 200 photographs collected for research and illustrative purposes.
- Digitization of historical films related to Rankin Inlet (see Polar Data Catalogue CCIN #11560).
- Deposit of oral history interview transcripts (in digital format) and digitized historical films in Rankin Inlet Community Resource Centre.
- Interview with Inuit leader and filmmaker Peter Ittinuar (May).
- Analysis of oral histories for manuscript related to mining Aboriginal social economy in Northern Canada (submitted).
- Preparation of manuscript on Rankin Inlet mining history for Mining and Communities book.
- 90-day field season using ethnographic research methods including participant observation, discourse analysis, and semi-structured interviews with multiple actors in Rankin Inlet and Baker Lake, Nunavut (TC).
- Worked with a local research assistant in Rankin Inlet.
- Coding ethnographic research findings, undertaking thematic analysis.

2. Resolute: Polaris Mine historical research (Sandlos, Green)

- Archival research by MA student Heather Green in Ottawa (Library and Archives

Canada), Vancouver (Cominco Archives), Waterloo, ON (the Canadian Arctic Resources Committee files held at Wilfrid Laurier University) on the history of Polaris Mine and the community of Resolute.

- Field interviews by MA student Heather Green with former Inuit mine workers at Polaris Mine and community members of Resolute Bay in May 2012.
- Preparation by Heather Green of journal article about Inuit employment and environment of Arctic mining, to be submitted to *Etudes/Inuit Studies*.
- Recruitment of potential MA student to conduct research on the history of mineral exploration in the Arctic (2013-14).

3. Nansivik/Arctic Bay: Nanisivik mine historical research (Tester, Lim, Midgley)

- Completion of master's thesis related to Arctic mining at Svalbard and Nanisivik (Midgley)
- Continuation of archival and field work related to the history of the Nanisivik Mine, Baffin Island and the North Rankin Nickel Mine, Rankin Inlet, Nunavut Territory.
- Frank Tester interviewed and filmed Frank Agar, former president of Mineral Resources International (MRI), in Calgary, July 28, 2012
- Frank Tester and graduate student Tee Lim conducted archival and library research at the Library and Archives of Canada (primarily related to Record Group RG 21 (Energy Mines and Resources), and added material to the Nunavut social history database (April 1, 2012 – August 31, 2012)
- Undergraduate student research assistant, Drummond Lambert, cataloguing and adding records from RG 21 to the Nunavut Social History database (September 1 – December 20, 2012): <http://www.nunavutsocialhistory.arts.ubc.ca>

- Retrieval of relevant photos related to mines at Rankin Inlet and Nanisivik from the Library and Archives of Canada and other sources, including those provided by Frank Agar, former president of MRI.

4. Political economy of contemporary mineral development (various sites): (Cameron, Tester, Lambert, Williams, Hoogveen, Levitan)

- Meeting with Pauktuutit, Ottawa, December 17, to discuss the design of and logistics related to looking at the impacts of mining on women and families in Qamani'tuaq.
- January – February 17. Design of a workshop for women in Qamani'tuaq to train them as researchers involved in the Women and Mining Impacts study.
- February 17 – 26, 2013. Research workshop in Qamani'tuaq.
- February 27-28, 2013. Focus group with Inuit women in Qamani'tuaq.
- March – May, 2013. Interviews and data collection, Qamani'tuaq.
- Trip to Cambridge Bay, NU for meetings, consultation, interviews (EC, AW); Spring 2013, dates TBD
- Trip to Arctic Bay, NU for consultation, meetings with elders (JTM), January 2013.
- Archival material review and analysis (JB, EC).

Results

Results from these activities included: the collection of thousands of archival and public policy documents related to historical and contemporary mineral development; interviews with key informants and community members regarding current proposed or ongoing mining activity; and the development of long-term research relationships with Inuit community and territorial organizations concerned with the

social and environmental aspects of mining. These activities have yielded concrete results, reported in theses, presentations, posters, and articles (see “Publications”), as well as providing the foundation for further projected results, both over the life of this project and beyond.

Rankin Inlet

Archival and oral history research conducted related to the history of mining at Rankin Inlet has explored the long-lasting impacts of this short-lived mine. Founded on a rich nickel deposit located on the western shore of Hudson Bay, the mine formed the basis for the modern settlement at Rankin Inlet. Regarded as an “experiment” in Inuit modernization and a solution to a perceived “crisis” affecting traditional resources, the mine’s short operational life (1957-1962) belied its importance as Canada’s first Arctic mine and the first to actively promote the employment of indigenous workers. At its peak, Inuit employees, virtually all of whom moved to Rankin Inlet with no experience of wage work, comprised about 70% of the mine’s workforce, as both underground and surface workers.

The mine’s sudden closure in 1962 devastated the local economy, forcing many Inuit to leave to seek alternate employment or to return to traditional harvesting activities. Some federal officials had long suggested Inuit mine workers should be encouraged to keep up land-based activities such as hunting and trapping as a security against mine closure (and against massive welfare expenditures). As early as 1959, Northern Service Officer D.W. Grant wrote the mine manager to protest the institution of seven-day work weeks, arguing for the need to balance work and time off so Inuit could “practice their traditional occupations” and prepare for a “return to life on the land” after the mine. The balance of wage labour and traditional activities was also framed by government officials, anthropologists, and even the popular media as part of a process of cultural “adaptation” to modern work practices and settlement life. Nevertheless, the return to these activities was difficult for many former miners and their families.

Government “make-work” projects in the 1960s and 70s helped the community’s transition from a mineral economy to its role as a government service centre and transportation hub for the Kivalliq.

Amateur films made by Peter Ittinuar in the early 1970s document the struggles faced by the community, but also the persistence and resilience of Inuit, some of whom relocated to work at mines elsewhere in the Canadian North before returning to Rankin Inlet. Oral histories conducted with former miners reveal the development of a mining identity amongst Inuit miners at Rankin Inlet, and their perceptions of the impact of mining on their lives and territory. In spite of its short, tumultuous life, the mine remains central to the identity of the community and its Inuit and non-Inuit residents alike. The memories shared by Inuit miners of their experiences at Rankin Inlet provide important insights into the experience of indigenous workers with mineral development, the transition to industrial modernity, and the impacts of mine closure.

High Arctic mines: Nanisivik and Polaris

Research conducted under this project also focused on Inuit experiences of mine development and closure at Canada’s first High Arctic mines, at Nanisivik on north Baffin Island and Polaris on Little Cornwallis Island, both lead-zinc operations. Research findings demonstrate a clear gap between the rhetoric and actual implementation of recent government and industry approaches to ‘sustainable’ mining, and socially responsibly mine closure. These mines, which closed in 2002, operated under agreements with the federal and territorial governments regarding economic and social benefits, but failed to meet Inuit employment and training objectives. In particular, some Inuit workers struggled with separation from families while working at these remote commute-mine sites, and with combining rotation work with traditional activities and community obligations.

Arctic Bay, connected by a 21 km road to Nanisivik,

directly affected by the economic and environmental changes associated with mine development and subsequent closure. After the closure of the mine in 2002, a series of public hearings were held to prepare a closure and reclamation plan for Nanisivik. Many Arctic Bay residents were concerned about the environmental impacts of mining, sought to obtain employment after the mine and hoped that buildings and equipment at Nanisivik could be relocated to Arctic Bay. Ten years on from closure, oral histories conducted with former Nanisivik miners and community members found ambivalence in local experiences with the mine. In particular, there was extensive disappointment, in some cases resentment, over the handling of the mine’s closure, including discontent with the company and government’s disposal of buildings and infrastructure, as well as valuable equipment from Nanisivik. Analysis of relevant policy documents and interviews with residents of Arctic Bay suggest that economic concerns were consistently prioritized over socially responsible closure concerns.

Another completed sub-project focused primarily on an archival and oral history study of the social, economic and environmental impacts of the Polaris lead-zinc mine on the service community of Resolute. The results suggested that, in contrast to Arctic Bay, the historical impacts of the Polaris Mine were cushioned (according to local memory) by Resolute’s geographical distance from the mine. Archival sources indicated that the interests of the community (Resolute) were not always aligned with those of environmental groups (particularly the Canadian Arctic Resources Committee) who criticized the environmental impacts of the mine. The most significant finding, however, is that local people remember the mine having limited impacts on the community, particularly due to its distance from Resolute. The focus of the study on an early example of a long distance commuting (LDC) service community helps to develop our understanding of the early social impacts of this now-dominant form of providing labour to remote mining developments.

Contemporary mining and Nunavut communities

Research under this project is also examining contemporary engagements with mineral development in Nunavut and other Arctic communities. Interviews were conducted with Indigenous leaders, government representatives, consultants, and lawyers involved in the negotiation, implementation, and/or regulation of Impact Benefit Agreements in the Northwest Territories, as well as a review key documents that have shaped the evolution (or lack thereof) of federal policy on IBAs over the past 10-15 years. This study examined the emergence of IBAs as a key dimension of resource governance in the North since the late 1990s, and revealed how this process has advanced neoliberal objectives in the region, including: the removal of barriers to accumulation, the privatization of state assets, functions, and services, and the promotion of market-based solutions to various social, economic, environmental, and political struggles. Similarly, ongoing research critically analyzes how the institutional structures through which extraction is assessed and governed in Nunavut have limitations regarding knowledge production, allocation of revenue streams, accounting for community concerns, and meeting objectives of the Nunavut Land Claim Agreement.

This analysis has been complemented by community-based research and collaboration with Inuit organizations concerned with contemporary issues related to mineral development. Meaningful partnerships have been established or in development with Inuit scholars and communities, including ongoing work in Kugluktuk and Qamani'tuaq, the development of partnerships in Cambridge Bay and Arctic Bay, and collaboration with NGOs Nunavummiut Makitaganarningit and MiningWatch. Research partnerships have also been established with Nunavut Sivuniksavut, an Inuit youth training centre in Ottawa, and Pauktuutit, the national Inuit women's organization. The latter group is co-developing (with NI Tester) a study of the impacts of mining on women and families in Qamani'tuaq, to be undertaken in

March-July 2013. Originating from Inuit women in Qamani'tuaq, concerned about the effects of mining on the well-being of themselves, their children and families, the approach uses participatory action research and popular education techniques to train a group of Inuit women who will then conduct quantitative survey research in their community to document the impacts that mining are having on women and families in the community.

Key-informant interviews and ethnographic research at Qamani'tuaq, Rankin Inlet and at the Meadowbank Mine site sought to document contemporary Inuit and non-Inuit experiences and perceptions of mine work, industrial development, and community assessments of proposed mines in the region (Kiggavik near Qamani'tuaq, Meliadine near Rankin Inlet). This research yields a complex, fine-grained understanding of how Inuit people, individually and collectively, understand and respond to the changes associated with large-scale mineral development. Historical experiences with mining occurred in the context of a series of social, economic, and environmental changes, including relocation/resettlement, the growth of colonial authority in the region, and shifting combinations of wage labour and subsistence practices. Similarly, contemporary mineral development is intersecting in complex ways with other developments in the Arctic, including Indigenous self-government and land claims, changing community and family arrangements, educational and technological change, public and private sector economies, and climate variability and change. Understanding how resource extraction intersects with and reinforces these challenges is a key goal of the project.

Discussion

Results from this project to date (and projected results) will inform contemporary debates and decisions regarding mineral development and Inuit communities. Our research suggests that contemporary assessments of mines must account for past experiences and

understandings of work, its relation to traditional practices and knowledges, and relations with histories of colonization and dispossession in the Arctic. Considerable social-scientific research effort is being focused on understanding the community impacts and benefits of contemporary mineral development (Knotsch et. al. 2011). The picture of the social outcomes and changes initiated by large-scale developments and their associated IIBAs, however, remains far from clear, in spite of ongoing research into social indicators of development impacts (cf. Haley et. al. 2011). Community monitoring accompanying IIBAs, through bodies such as the Nunavut Regional Socio-economic Monitoring Committees, may provide useful information on short- and long-term changes to community conditions related to mineral development, as well as building capacity within northern communities to monitor environmental and social changes occurring over periods of rapid industrial development.

Since the establishment of Nunavut in 1999 and the implementation of the Nunavut Land Claims Agreement (NLCA) administered through NTI, the nature of mining within Inuit Owned Lands (IOL) in the region has changed. Mineral extraction is therefore becoming an increasingly complex negotiation between the interests of corporations and Indigenous organizations. Increasing territorial control over the mineral extraction process means mining companies are subject to new regulations and must work to acquire a “social license to operate” within IOL, and contribute significant community and territorial benefits (Prno and Slocombe 2012). Mining activities have at times met with criticism at a local level, as large scale developments have the potential to rapidly alter Indigenous culture, land use, demographics, and environmental systems that support traditional harvesting. Certain grassroots organizations, who feel local needs and perspectives are not represented by territorial regulators, have formed to oppose large scale industrial activities (Nunavummiut Makitaganarningit 2010). Thus the presence of mining may increase the tensions within mixed economies, based on traditional and wage labour practices, and create conflict over

changing cultural values. In spite of the increasing role of the territorial government and Inuit land-claim organizations in mining regulation, considerable controversy has followed recent development proposals such as the Kiggavik uranium development near Baker Lake and the Baffinland Iron Mines Mary River project. Local communities and activists have expressed frustration at the speed, complexity and inaccessibility of the development regulation process (Bernauer 2012, Kunuk 2012).

In addition, the social and economic changes brought by large-scale mineral development in the Canadian Arctic will likely interact in complex ways with climate-related environmental changes. Changing environmental conditions may in some cases provide opportunities along with challenges. In particular, reductions in the duration and extent of sea-ice cover, particularly multi-year ice, has the potential to facilitate marine transport in the Arctic by extending shipping seasons and reducing navigational hazards and costs (Prowse et. al. 2009). In combination with rising commodity prices, reduced shipping costs (a critical consideration for bulky commodities such as minerals) may improve the viability of Arctic mineral operations. Climate change, combined with the construction of new transportation infrastructure, is likely to open new areas of the Arctic for mineral exploration and development, and it is crucial to consider resource extraction and shipping as human dimensions of climate change in the Arctic (Cameron 2012).

Important questions also remain about the sustainability of mineral resource-dependent economies such as that emerging in Nunavut. Minerals, as finite resources, are inherently unsustainable, and mining economies are subject to externally generated shocks due to regulatory changes, market conditions or the discovery of more economically viable deposits elsewhere (Waye et al. 2009, Bridge 2004). While the Nunavut Government is committed to creating a “conveyor belt” system that would bring new mines into production as old ones are phased out, local authorities’ ability to manage these

external factors is limited (Nunavut, Department of Economic Development and Transportation 2009). Important long-term planning challenges associated with mine closure remain in the Arctic. Indeed many projected projects may never actually go into full production, just as Newmont's Hope Bay gold mine in Western Nunavut suddenly halted its pre-production phase in early 2012, leaving many Inuit out of employment (George 2012). Moreover, operating mines are not necessarily economically secure, given volatile global economic conditions and the cost of extracting ore in Arctic environments.

Conclusion

The exploration and extraction of non-renewable resources has profoundly shaped Indigenous/non-Indigenous relations in the Canadian North. Historical research has documented the encounter between small, geographically dispersed Inuit communities and national and transnational mining capital as a catalyst for cultural and economic change in the Arctic. The recent rapid expansion of mineral development is radically transforming the social and economic landscape of the region. Managing and better understanding these changes has become a central concern of territorial authorities, as witnessed by the extensive social impact assessment and monitoring procedures associated with major developments. These changes are likely to interact in complex ways with climate, socio-cultural, and environmental change in the region, and the cumulative impacts of these changes will test the resilience of already stressed Arctic communities. As critical drivers of environmental and social change in the contemporary Arctic, the mineral and energy industries pose major challenges to sustainability and the ability of communities to absorb and adapt to both the short-term impacts of development and its longer-term social and environmental consequences. These development challenges include impacts on: food security and health; culture and language; rising income disparity; and family and social life (Gibson and Klinck 2005). As a new resource boom unfolds in the region, many

identify a need for comprehensive, accurate, and meaningful assessments of both past and present extractive activities.

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References

- Bernauer, W. 2011. Mining and the Social Economy in Baker Lake, Nunavut. Centre for the study of Co-operatives, University of Saskatchewan, 33pp.
- Bernauer, W. 2012. Uranium Controversy in Baker Lake. Canadian Dimension. February 3.
- Bridge, G. (2004). Contested Terrain: Mining and the Environment. *Annual Reviews -- Environment and Resources*, 29, 205-259.

- Cameron, E. (2012) Securing Indigenous politics: A critique of the vulnerability and adaptation approach to the human dimensions of climate change in the Canadian Arctic. *Global Environmental Change*, 22, 103-114.
- George, J. 2012. Newmont visits western Nunavut to discuss Hope Bay's future. *Nunatsiaq News* 15 May, 2012 http://www.nunatsiaqonline.ca/stories/article/65674newmont_visits_western_nunavut_to_discuss_hope_bays_future/ [Accessed May 30, 2012].
- Gibson, G., and J. Klinck. 2005. "Canada's Resilient North: The Impact of Mining on Aboriginal Communities," *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health* 3: 116-139.
- Haley, S., Klick, M., Szymoniak, N., & Crow, A. (2011). Observing trends and assessing data for Arctic mining. *Polar Geography*, 34(1-2), 37-61.
- Kunuk, Z. 2012. My Inuit Point of View. Formal intervention to Nunavut Review Board, June 8, reproduced at <http://www.isuma.tv/lo/en/did/zacharias-kunuk-formal-intervention-to-nirb-written-submission-june-8-2012> [Accessed Sept. 30, 2012].
- Knotsch, C., Bradshaw, B., Okalik, M., & Peterson, K. (2011). Research and information needs concerning community health impacts and benefits from mining—A 2010 community visit report. National Aboriginal Health Organization, Ottawa, 16pp.
- McPherson, R. 2003. *New Owners in their Own Land: Minerals and Inuit Land Claims*. Calgary: University of Calgary Press.
- Natural Resources Canada. (2012). Mining Exploration Information Bulletin. <http://www.nrcan.gc.ca/minerals-metals/publications-reports/4413#F5> (March) [Accessed 5 April 2012].
- Nunavut, Department of Economic Development and Transportation. (2009) *Parnautit: A Foundation for the Future*. 64 pp.
- Nunavummiut Makitaganarningit. 2010. Why Nunavut needs a public inquiry into uranium mining: A position statement from Nunavummiut Makitaganarningit. *Nunatsiaq News* 29 June 2010, http://www.nunatsiaqonline.ca/stories/article/why_nunavut_needs_a_public_inquiry_into_uranium_mining/ [Accessed 30 June 2010].
- Prno, J., & Scott Slocombe, D. (2012). Exploring the origins of 'social license to operate' in the mining sector: Perspectives from governance and sustainability theories. *Resources Policy*. In press.
- Prowse, T.D., Furgal, C., Chouinard, R., Melling, H., Milburn, D., Smith, S.L. (2009). Implications of climate change for economic development in northern Canada: energy, resource, transportation sectors. *Ambio*, 38(5): 272-281.
- Waye, A., D. Young, J.P. Richards and J.A. Doucet. 2009. "Sustainable Development and Mining—An Exploratory Examination of the Roles of Government and Industry." In J.P. Richards, ed., *Mining, Society and a Sustainable World*. Berlin: Springer-Verlag.

Publications

(All ArcticNet refereed publications are available on the ASTIS website (<http://www.aina.ucalgary.ca/arcticnet/>)).

Boulter, P. and Sandlos, J., 2012, Survival in an Arctic Boomtown: Socio-economic and Cultural Diversity in Rankin Inlet, 1956-63, Paper presented at International Polar Year (IPY) Conference, Montreal.

Boutet, J.S. , Keeling, A., and Sandlos, J., 2012, Historical Perspectives on Mining and the Social Economy, Northern Communities Working Together: The Social Economy of Canada's North.

Cameron, E., 2012, Scaling Arctic Climate Change, Northern Environmental History.

Cameron, E., 2012, Scaling climate politics: Indigenous peoples and the limits of the local, Paper presented at the Historical Materialism Conference, Toronto, ON.

Cameron, E., 2012, Resource Extraction and Shipping

- as Human Dimensions of Climatic Change: On the Politics of ‘Local’ Knowledge in Arctic Social Science, Paper presented at International Polar Year (IPY) Conference, Montreal.
- Cameron, E., Kittmer, S., Keeling, A., 2012, Future Mining, Draft section of Chapter 7, IRIS-1 Report.
- Caputo-Nimbark, R. and Keeling, A., 2012, Mining, Language, and Environment: Developing (cyber) spaces for preserving biocultural diversity in northern communities, Poster presented at ArcticNet ASM, Vancouver.
- Cater, T., 2012, The Road to Meliadine: Exploring Past, Present, and Future Mining Encounters in the Kivalliq Region of Nunavut, Paper presented at ArcticNet ASM, Vancouver.
- Cater, T., 2012, “You Don’t Want To Be There”: An Ethnographic Analysis of Past, Present, and Future Mineral Encounters in the Kivalliq Region, Nunavut, Paper presented at Atlantic Division of the Canadian Association of Geographers (ACAG) Meeting in Halifax, N.S..
- Cater, T. and Keeling, A., 2012, When Mining Comes (Back) to Town: Exploring mining encounters in the Kivalliq Region, Nunavut, Poster presented at International Polar Year (IPY) Conference, Montreal.
- Green, H., 2012, The Arctic Rust Belt: The Socioeconomic and Environmental Legacy of Deindustrialization in Arctic Canada, Poster presented at International Polar Year (IPY) Conference, Montreal.
- Green, H., 2012, Colonialism, Community Consultation, and Inuit Employment in an Arctic Mine, 1970-2002, Paper presented at ArcticNet ASM, Vancouver.
- Keeling, A., 2012, Ghost Towns and Zombie Mines: The Future History of Mining in Canada, Paper presented at Canadian Association of Geographers Annual Meeting, Waterloo, ON.
- Keeling, A. and Boulter P., 2013, Mineral development in the Eastern Arctic, Draft section of Chapter 3, IRIS-2 report.
- Keeling, A. and Boulter, P., 2013, From Igloo to Mineshaft: Inuit Labour and Memory at the Rankin Inlet Nickel Mine (book chapter), Mining and Communities in Northern Canada: History, Politics, and Memory.
- Keeling, A. and Sandlos, J., 2012, Canada’s Mining Legacy and the Challenge of Sustainability (book chapter), The Nature of Canada.
- Keeling, A. and Tester, F., 2012, The Long Way Down: Mining, Industrialization and Culture Change at Rankin Inlet, NU, 1957-1968, Paper presented at International Polar Year (IPY) Conference, Montreal.
- Levitan, T. and Cameron, E., 2012, IBAs and the Neoliberalization of Northern Resource Extraction (book chapter), Mining and Communities in Northern Canada: History, Politics, and Memory.
- Lim, T. and Tester, F., 2012, “We Thought It Would Last Forever”: The social scars and legacy effects of mine closure at Nanisivik, Canada’s first High Arctic Mine, Paper presented at ArcticNet ASM, Vancouver.
- Lim, T., Satterfield, T. and Tester, F., 2012, The Social Dimensions of Mine Closure: Lessons from Nanisivik, Canada’s First High Arctic Mine, Paper presented at Inuit Studies Conference, Washington, D.C..
- Midgley, S., 2012, Dealing with the Legacies of a High Arctic Mine: The Closure of Nanisivik, Paper presented at International Polar Year (IPY) Conference, Montreal.
- Midgley, S., 2012, High Arctic Mining at Nanisivik and Svalbard: Co-producing Ores, Science and States, Poster presented at International Polar Year (IPY) Conference, Montreal.
- Midgley, S., 2012, Contesting Closure: The Science, Politics and Community Responses to Closing the Nanisivik Mine (book chapter), Mining and Communities in Northern Canada: History, Politics, and Memory.
- Sandlos, J. and Keeling, A., 2013, Ghost Towns and

Zombie Mines: The Historical Dimensions of Mine Abandonment, Reclamation and Redevelopment in the Canadian North (book chapter), Northern Environmental History.

Tester, F., 2012, Off The Page: 'Making Inuit' in Planning for the Nanisivik Mine, Arctic Bay, Baffin Island, 1970-79, Paper presented at Inuit Studies Conference, Washington, D.C..

Tester, F., 2013, Climate Change as a Human Rights Issue, Chapter in Environmental Social Work.

Tester, F. and Lambert, D., 2012, Pioneering on behalf of Inuit: Planning Canada's first High Arctic Mine, Paper presented at ArcticNet ASM, Vancouver.