AARHUS UNIVERSITY

Coversheet

This is the accepted manuscript (post-print version) of the article.

Contentwise, the post-print version is identical to the final published version, but there may be differences in typography and layout.

How to cite this publication

Please cite the final published version:

Sovacool, B., & Sidortsov, R. (2015). Left Out in the Cold: Energy Justice and Arctic Energy Research. *Journal of Environmental Studies and Sciences*, 5(3), 302-307. DOI: [10.1007/s13412-015-0241-0](https://doi.org/10.1007/s13412-015-0241-0)

Publication metadata

Title:	<i>Left Out in the Cold: Energy Justice and Arctic Energy Research</i>
Author(s):	<i>Sidortsov, R. & Sovacool, B.</i>
Journal:	<i>Journal of Environmental Studies and Sciences</i>
DOI/Link:	10.1007/s13412-015-0241-0
Document version:	Accepted manuscript (post-print)

General Rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Left Out in the Cold: Energy Justice and Arctic Energy Research

Introduction

In this article, we hold that the concept of energy justice offers a novel, much-needed way to reframe the dilemmas surrounding Arctic energy production, use, and policy. To make this case, we first briefly survey the human dimensions of the changing Arctic before describing the contours of the Arctic energy landscape. We then present energy justice as a conceptual and contextual tool that can better inform research, which can in turn better inform policy and practice.

The Human Dimension of the Changing Arctic

The Arctic is changing. An early yet assertive warning of physical and climatic changes came from the Intergovernmental Panel on Climate Change (IPCC), who noted more than a decade ago that “warming in the Arctic, as indicated by daily maximum and minimum temperatures, has been as great as in any other part of the world” (McCarthy et al., 2001, p. 810).). Today, the Arctic is warming twice as fast as the rest of the world (NOAA, 2014). Per the National Oceanic and Atmospheric Administration, regional and interannual variability notwithstanding, the biomass in the tundra is increasing, while the Greenlandic ice sheet and sea ice are decreasing (Stocker et al., 2013, p. 7). Because of these changes, the habitats of Arctic signature species such as the polar bear (NOAA, 2014) and Arctic fox are shrinking with corresponding grave impacts on mortality and morbidity (NOAA, 2012).

However, polar bears are not the only Arctic residents affected by climate change. Depending on the boundary used, the region is home to 4 million to 10 million people (Andrew, 2014, p. 14). Many Arctic inhabitants, especially the indigenous 10 percent, are intimately familiar with the effects of warming in their homeland. (Id.). Perhaps the most vivid example is the native village of Kivalina in Northwest Arctic Borough, Alaska. Located on a barrier island in the Chukchi Sea, the village is in grave danger of disappearing under the ferocious waves that pound the island’s fragile coastline. The sea ice protected the island and its inhabitants, the Iñupiat people, for generations while providing a necessary base for hunting bowhead whales, their main source of food supply. The village of four hundred people will soon need to evacuate at the estimated cost of \$100 million dollars, which neither the federal nor the state government have yet to set aside (Mooney, 2015).

Fortunately, not all Arctic communities face the challenges akin to those of Kivalina. According to an Inuit Circumpolar Council (ICC) report, despite the Inuit people’s general concern about the impact of climate change, “they have resolved to adapt to the changed climate and thinning ice as best they can – and show considerable confidence they will succeed. . .” (ICC, 2008, p. iii). However, economic development in the Arctic, often prompted by easier access due to the receding sea ice, appears to be a more significant concern for the indigenous people of the Arctic. For example, Inuit from Canada, United States, and Greenland are extremely worried about the impact of increased shipping on their future (Id.). According to anthropologist Florian Stammler, it is not the individual activities such as roads, sand and gravel quarries, and even oil and gas drill sites that Nenets, Even, and

Evenki reindeer herders fear the most. It is the systematic invasion into their traditional territory and way of life, and the cumulative effect thereof, that poses the greatest threat to the traditional dwellers of the Russian “Extreme North” (Stammmler, 2015).

Economic development and its desired cumulative effect, which is better known among Arctic non-indigenous population or “newcomers” as “value creation” also represents a double-edged sword. Many Arctic non-indigenous communities have fallen victim to the downside of economic development when boom turned bust. The chief example of such a reversal of fortune is the rapid decline of many towns and cities in the Russian Arctic and sub-Arctic in the early 1990s followed by the massive exodus of the newcomer population (Andreeva & Kryukov, 2008). As one of the authors witnessed firsthand in 1991, the opposite of value creation happened – asset values, including the values of precious housing, plunged. One family was delighted to barter their three-room apartment for a refrigerator to get some value out of an asset that the mother and father worked for their entire lives. Others were not so lucky and were forced to abandon their hard-earned apartments before moving south.

Changes in the Arctic due to warming temperatures and increasing economic activity are not limited to the region. Any U.S. resident who views recent abnormally frigid temperatures in the lower forty-eight states as evidence against climate science would be shocked to learn that the origin of these cold spells is the jet stream caused by the warming Arctic Ocean (Overland et al., 2014). Investors, especially those who aim for long-term growth and stability, should take a close look at high-cost and risk-laden Arctic oil projects to ensure that they are not putting their money into potentially stranded assets. Shareholders in companies such as Shell and ExxonMobil should question the prudence of the companies’ thus far unsuccessful campaigns in the Chukchi and South Kara Seas.

Energy is at the Center

Many of the present and future changes in the Arctic have their origin in acquisition, transportation, and use of energy. Whether it is combustion of fossil fuels that leads to melting sea ice or construction of oil and gas pipelines that block reindeer migration routes, energy has had a major impact on the Arctic region since oil and gas were first discovered beneath the frozen ground. Several energy experts have opined that due to the recent decline in oil prices, the massive race for Arctic oil and gas might be in terminal decline, or at least on hold for the foreseeable future.¹ Even though the latter is conceivable, the former is unlikely. Because perhaps the only certain thing about oil prices is their uncertainty and their volatility, and because the dream of discovering the “second Prudhoe Bay” is alive and well in the minds of many energy company executives, Arctic energy development is far from over.

The current pause in widespread Arctic oil and gas development provides an excellent opportunity for researchers to fill knowledge gaps and for policymakers to use this knowledge to improve policy responses before the next wave of energy development commences. In our view, one of the biggest epistemic vacuums is perhaps one of the most critical for the communities that populate the Arctic and for the environment in which they live. This lacunae provides the most direct link to the moral

¹ For example, the Russian oil giant Rosneft postponed its operations in the South Kara Sea until 2016 (Offshore, 2015 and Statoil will not continue its exploratory drilling campaign in the Barents Sea in 2015 (Reuters, 2015). On the other hand, both ENI Norge and Gazprom Neft appear to continue their largely developed Goliat and Prirazlomnoe projects in 2015 (ENI, 2015) (Gazprom, 2015).

rights and obligations that the rest of the world population has regarding energy development in the Arctic. It addresses the most fundamental question – “What and whom is energy for?” – That government energy planners and corporate executives have failed to address for decades. The name of this vast and immensely important topical area is energy justice.

Until recently, energy justice received little attention among researchers. In the last fifteen years, energy research and scholarship has been dominated by science and economics (Sovacool, 2014). Consequently, gender studies, philosophy and ethics, communication studies, geography, social psychology, cultural anthropology, development studies, governance, and the sociology/history of technology and related disciplines have been virtually absent from grant applications and policy papers.² This created what sociologists Loren Lutzenhiser and Elizabeth Shove described as follows:

Rather than seeing human choice as critical and controlling in energy use and technology choice, the conventional paradigm focuses on physical-mechanical systems in which human factors are of concern only in terms of possible injury, discomfort or mis-operation of equipment (Lutzenhiser & Shove, 1999, p. 217).

This rather sad state of affairs prompted several scholars, including the authors of this article, to dedicate significant time and effort into deciphering, conceptualizing, and otherwise exploring the topic of energy justice.

Energy Justice as a Conceptual Tool

To be sure, the concept of energy justice is only starting to emerge in the legal and policy literature (see Hall 2013, Guruswamy 2010, and Sovacool and Dworkin for a small sample). However, we believe the foundation to the concept rests on the three theories of distributive, procedural, and cosmopolitan justice. We propose two fundamental principles of energy justice related in part to these theories, *prohibitive* and *affirmative* (Sovacool et al, 2013). In sum, we use the following assumptions as the cornerstones of our “proto-foundation”:

Assumption 1: Every human being is entitled to the minimum of basic goods of life that is still consistent with respect for human dignity. . . . (Id. p. 30).

Assumption 2: The basic goods to which every person is entitled also include the opportunity to develop the characteristically human capacities needed for a flourishing human life. . . . (Id. p. 35).

Assumption 3: Energy is only an instrumental good – it is not an end in itself. . . . (Id. p. 38).

Assumption 4: Energy is a material prerequisite for many of the basic goods to which people are entitled. . . . (Id. p. 41).

² Although interdisciplinary in nature, energy justice has the closest ontological relation with philosophy and ethics.

Grounded in these philosophical assumptions, we propose two principles of energy justice. The *prohibitive principle* posits that: “energy systems must be designed and constructed in such a way that they do not unduly interfere with the ability of any person to acquire those basic goods to which he or she is justly entitled.” (Id. p. 42) The *affirmative principle* posits that: “if any of the basic goods to which every person is justly entitled can only be secured by means of energy services, then in that case there is also a derivative right to the energy service.” (Id. p. 46)

The prohibitive principle does not equate energy justice to entitlement to energy or energy services. It posits that injustice can emerge from something other than lack of energy access. In addition, this principle folds external costs into the discussion. Finally, it asserts that various energy systems affect people in many different ways. Thus, the prohibitive principle of energy justice reaches beyond the concepts of energy access, as well as energy and fuel poverty (Sidortsov, 2015). The affirmative principle is more closely related to these three concepts, but important differences exist. Because it is limited to basic goods that can only be obtained by means of energy services, it restricts entitlement to energy and energy services.

Energy justice is best understood by examining instances of energy injustice. It is unlikely that one would take note of how just and fair things are unless something disturbs the status quo. Unfortunately, it usually takes a human rights violation, serious environmental degradation, or a fatal accident to notice energy injustice. Additionally, energy injustice usually straddles different spheres and has a ripple effect, making it difficult to identify and classify particular instances. Yet it is impossible to design a solution to energy injustice without knowing *how* it hits and *where* it hits the most. For these reasons, we tracked instances of energy injustice through the five dimensions listed in the Table 1 below.

Table 1 Five Dimensions of Energy Justice

Dimension	Emphasis
Temporal	Intergeneration allocation of negative externalities
Economic	Economic inequality, distribution of energy services, fuel poverty, energy poverty and drudgery, resource depletion and the effects of energy price volatility
Sociopolitical	Social marginalization and political instability, corruption, resource curse, erosion of democratic institutions, human rights abuses, energy resource wars
Geographic	Uneven spatial distribution of benefits, externalities, and risks including uneven economic development, risk “dumping” and shifting, community displacement, and climate refugees
Technological	Reliability, safety, vulnerability, inefficiency, and path dependency including carbon-lock in

Energy Justice in the Arctic Context

We do not view our energy justice work as a purely theoretical exercise. We maintain that despite its philosophical grounding, energy justice is a concept intended for practical application. The main purpose of the lengthy introduction to this commentary was to show that despite its remoteness and scarce population, the Arctic is more important for the wellbeing of the global population than it seems. Because of the harsh conditions that exist in the Arctic, a poor decision about the provision of energy services for the people that live there might translate into dire consequences. Similarly, because of the importance of the Arctic sea ice and Greenlandic ice sheet to the planet's climate, poor decisions regarding development of Arctic hydrocarbons might have severe repercussions for those who live in the global regions susceptible to climate change.

In *Energy Security, Equality, and Justice* we introduced the energy justice checklist, a model that various decision-makers can use to incorporate energy justice into their analysis. In Table 2, we draw on real-world examples from the Arctic and present the Arctic energy justice list.

Table 2 Arctic Energy Justice Checklist

Dimension	Principle	Sample Question	Example of Injustice to be Avoided	Solution
Temporal	Prohibitive	Does a technology option account for physical risks posed by climate change?	Combustion of marine bunker fuel is a significant source of black carbon, effects of which are exacerbated in the regions with snow and ice cover. With the increased shipping traffic in the Arctic, black carbon emissions will further increase rapidly receding sea ice.	Multilateral treaty targeting bunker fuel use in the exclusive economic zones of Arctic littoral states (A5); national permitting schemes (A5) restricting black carbon emissions; industry best practices reducing the use of bunker fuel in the regions with snow and ice cover.
	Affirmative	Does a decision to build energy infrastructure account for physical risks posed by climate change?	A provincial government permits construction of a natural gas pipeline and a baseload gas-fired power plant to generate electricity for a remote Arctic city. The planners do not take into account melting permafrost in the tundra. Parts of the pipeline become unstable, leading to frequent and prolonged service interruptions.	Temporal analysis during the siting and permitting process.
Economic	Prohibitive	To what extent does the energy-centric economy of the region or country account for volatility of fossil fuel prices?	Oil and gas extraction and service industry dominates a regional or national economy. Global oil prices decline causing companies to lay off tens of thousands of workers.	Economic impacts of energy activities, including the impacts of fossil fuel price volatility must become part of pre-development strategic assessment process (e.g. Integrated Management Plan for the Barents Sea (Norway)).
	Affirmative	Does volatility of fossil fuel prices play a role in decisions regarding critical infrastructure?	A hospital of a prosperous Arctic mining town relies on diesel fuel and heating oil. Because oil prices are at an all-time high, the hospital cannot afford to provide the full range of services.	Fossil fuel price volatility and non-fossil alternatives must be taken into account during the planning and design of critical infrastructure.

Sociopolitical	Prohibitive	Does an energy partnership support an oppressive political regime?	An oil supermajor enters into an agreement with a national oil company to develop an Arctic oil field. Due to the host nation's questionable foreign and military policy, the government of the home nation imposes economic sanctions against it. The first round of sanctions do not specifically target the supermajor while other companies suffer economic losses due to the reciprocal sanctions.	International sanctions intended to undermine key economic activities of the "offender" nation must apply equally to all involved private actors under the jurisdiction of the home nation; absolute transparency to ensure that the government is not subject to lobbying by interested private actors.
	Affirmative	Is provision of basic energy services tied to political support of a person, group, or a non-state actor?	To get local approval for an oil and gas project, a company offers diesel generators and diesel fuel to an indigenous community. Because the community lacks portable electricity generators and is thus virtually unable to provide basic educational and medical services, it accepts the offer.	Legal mechanisms during environmental and socio-economic assessments strengthening free, prior, and informed consent.
Geographic	Prohibitive	Do the proposed energy activities negatively affect other economic activities that are prevalent in the area?	An indigenous community relied on hunting of marine mammals to subsist for over a millennium. An oil spill has completely disrupted this activity for several years. The community lost its primary source of nutrition.	The risk of such a disruption including the resources allocated to and parties responsible for its mitigation must be adequately considered during the environmental assessment process.
	Affirmative	Are all options considered for providing critical energy services?	The government abandons support for a small remote settlement because of the high costs of delivering energy. Only conventional options are considered despite the fact that the settlement has untapped wind resources.	Renewable options must be considered during the energy planning process.

Technological	Prohibitive	To what extent are low-probability, high severity risks taken into account during the oil and gas licensing and permitting process?	A competent authority considered catastrophic oil spill data for the preceding fifteen years before granting a navigation permit. The analysis showed no measurable risk of a catastrophic oil spill. The last major spill occurred twenty years before the competent authority issued a permit. The following year, a tanker full of crude oil ran ashore, causing the worst tanker oil spill in the nation's history.	Oil spill prevention analysis must include the most comprehensive data set accounting for such a "fat-tailed" distribution of risk.
	Affirmative	Does the chosen technology provide sufficient fuel flexibility in the case of a prolonged interruption?	A municipality in a remote coastal town purchases new diesel generators for its critical infrastructure. The municipality does not consider alternative back up options such as wind turbines with battery storage. The tanker carrying diesel fuel for the village cannot reach it due to severe ice conditions.	Renewable options must be considered during the energy planning process.

Conclusion

To conclude, the vast and troublesome physical, climatic and socioeconomic changes facing the Arctic demand equally significant shifts in how social scientists approach the problem. Energy justice perhaps offers a centerpiece around which such research could be organized. The Arctic has attracted for decades researchers of all disciplines who compiled a great deal of scientific knowledge about the region. Because of initiatives supported by the Arctic Council, the Inuit Circumpolar Council, the World Wildlife Foundation, and many other international organizations, as well as many national government agencies, academic research institutions, and non-governmental organizations, energy justice researchers have a great deal of data to build on. Energy justice could act as the much-needed link connecting "numbers" and stories, current and future energy activities, and human lives. Energy justice analysis could also be a sobering alternative to political pandering where politicians seem to be predominately concerned with keeping up with their Arctic neighbors regardless of the consequences of the race. Most importantly, energy justice analysis helps ensure that Arctic energy development puts people and their homes first.

Bibliography

- Andreeva, E. & Kryukov, V., 2008. The Russian Model: Merging Profit and Sustainability. In: A. a. L. O. Mikkelsen, ed. *Arctic Oil and Gas: Sustainability at Risk?*. s.l.:Routledge, pp. 240-288.
- Andrew, R., 2014. *Socio-Economic Drivers of Change in the Arctic*, s.l.: AMAP.
- ENI, 2015. *ENI: Ready for Departure to Norway*. [Online]
Available at: <http://www.eninorge.com/en/Samlemappe-for-artikler/Ready-for-departure-to-Norway/>
[Accessed 27 February 2015].
- Gazprom, 2015. *Gazprom: Prirazlomnoe Oil Field*. [Online]
Available at: <http://www.gazprom.com/about/production/projects/deposits/pnm/>
[Accessed 27 February 2015].
- Guruswamy, L., 2010. Energy Justice and Sustainable Development. *Colorado International Journal of Environmental Law and Policy*, 21(2), pp. 231-275.
- Hall, S., 2013. Energy justice and ethical consumption: comparison, synthesis and lesson drawing. *Local Environment: The International Journal of Justice and Sustainability*, 18(4), pp. 422-437.
- Inuit Circumpolar Council – Canada, 2008. *The Sea Ice is Our Highway: An Inuit Perspective on Transportation in the Arctic*, s.l.: ICC.
- Lutzenhiser, L. & Shove, E., 1999. Contracting knowledge: the organizational limits to interdisciplinary energy efficiency research and development in the U.S. and the U.K. *Energy Policy*, Volume 27, pp. 217-227.
- McCarthy, J. e. a., 2001. *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, s.l.: Cambridge University Press.
- Mooney, C., 2015. The remote Alaskan village that needs to be relocated due to climate change. *The Washington Post*, 15 February.
- NOAA, 2012. *Arctic Report Card: Update for 2012*. [Online]
Available at: <http://www.arctic.noaa.gov/report12/>
[Accessed 27 February 2015].
- NOAA, 2014. *Arctic Report Card: Update for 2014*. [Online]
Available at: <http://www.arctic.noaa.gov/reportcard/>
[Accessed 27 Feb 2015].
- Overland, J. e. a., 2014. *Air Temperature*, s.l.: NOAA.
- Reuters, 2015. Norway's Statoil Will Not Drill In Arctic Barents Sea This Year. *Rigzone*, 2015 January.
- Sidortsov, R., Forthcoming in 2015. *Energy Justice*. s.l.:Edinburgh University Press.
- Sovacool, B., 2014. What Are We Doing Here? Analyzing Fifteen Years of Energy Scholarship and Proposing a Social Science Research Agenda. *Energy Research and Social Science*, 1(1), pp. 1-29.

- Sovacool, B. & Dworkin, M., 2014. *Global Energy Justice: Problems, Principles, and Practices*. s.l.:Cambridge University Press.
- Sovacool, B., R. S. & B. J., 2013. *Energy Security, Equality, and Justice*. s.l.:Routledge.
- Staff, O., 2015. Rosneft Postpones Kara Sea Drilling. *Offshore*, 3 February.
- Stammler, F., 2015. *Environmental and Ethnological Assessment in the Russian Extreme North* [Interview] (20 February 2015).
- Stocker, F. e. a., 2013. *Climate Change 2013: The Physical Science Basis, Summary for Policymakers*, s.l.: IPCC.