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ARCTIC INDIGENOUS PEOPLES, DISPLACEMENT, AND CLIMATE CHANGE: TRACING THE CONNECTIONS

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P R O C E E D I N G S

MS. FERRIS: Welcome to Brookings. My name is Beth Ferris. I'm a senior fellow here at Brookings and co-director of the Brookings-LSE Project on Internal Displacement.

We're delighted to welcome you to this presentation on "Arctic Indigenous Peoples Displacement and Climate Change: Tracing the Connections." Climate change is alive and well in the Arctic. We know that temperatures are getting warmer in the last few decades. The average Arctic temperature has increased twice as much as the global temperature. This means less ice.

Last fall, the National Snow and Ice Data Center documented a record low in the level of Arctic sea ice. The Greenland ice sheet is shrinking twice as fast as estimated by the Intergovernmental Panel on Climate Change and is losing mass at about five times the rate it was in the early 1990s. Because sea ice forms a natural barrier against storm wave action, ice melting allows larger storm surges to develop, increasing erosion and other factors. Fine permafrost contributes to erosion and damages houses, infrastructure, buildings as a stable, rock-hard formation gives way to soggy land. Warming temperatures and melting sea ice have major consequences for marine life, animals, insects, vegetation and human beings. And, today, we're going to look at the particular effects of climate change on a particular group of human being, indigenous peoples living in the Arctic community.

What I'd like to do is introduce the panelists and then turn it over briefly to my colleague, Charley Ebinger, to talk about a larger Brookings-wide initiative on the Arctic.

We're going to begin though by looking at the situation, the Scandinavian Arctic with presentations by two researchers from the Center for International Climate and Environmental Research Oslo or CICERO. Unfortunately, they can't be with us today, but we've got an audiovisual presentation that my colleague, Daniel Petz, with ably flick through.

They've both been working on displacement issues and climate change issues and indigenous peoples' issues and the Scandinavian Arctic for many years, and as you'll see, Ilan's presentation focuses on the impact of natural resource extraction on indigenous communities where possibilities are increasing as a result of global warming. And Marius's presentation focuses on the impact of climate change on reindeer herding and certainly a source of livelihood for many of Saami and the Scandinavian Arctic.

We'll then turn to the Russian north, Siberia, with a presentation by Susan Crate, who's an assistant professor of anthropology at George Mason University. She's worked with indigenous communities in Siberia since 1988 and for the last 5 years has expanded her research focus to include other communities.

Then we'll turn to Alaska with a presentation by Robin Bronen, who is a human rights attorney and executive director of the Alaska Institute for Justice. She has a PhD from the Interdisciplinary Resilience and Adaptation Program at the University of Alaska Fairbanks.

One of the joys of working on this project has been to work with researchers from very different disciples. Ilan Kelman's background is in botany and geography and we've got anthropologists and attorneys and I'm a political scientist and somehow those kinds of experiences and background are all necessary to understand the full impact of global climate on indigenous peoples in the Arctic.

As I mentioned, this is part of a wider, Brookings-wide initiative to look at other issues related to climate change in the Arctic and I'll ask my colleague, Charley Ebinger, also a senior fellow here at Brookings, to say a few words about that and then we'll go straight into the presentations.

There will be time for questions and answers later, so, please make your notes as we go along. Thank you.

MR. EBINGER: Thank you, Beth, and good morning, ladies and gentlemen. I'm Charley Ebinger, the director of the Energy Security Initiative Program which is, as is Beth's program, part of the Brookings Foreign Policy Research Program. I'm delighted to be even a small part of today's event. This marks the third in a series of ongoing presentations and seminars that form part of a cross-Brookings research program examining the economic, environmental and demographic changes of a changing Arctic.

Given the rapid changes taking place in the region, the Foreign Policy Program at Brookings last year launched a major research effort to examine what we see is the critical considerations related to the development of the Arctic. My energy security initiative together with Beth's program on internal placement, the Center for 21st Century Security and Intelligence and our program on managing global order initiative have all joined together to look at the broadest range of issues arising in the Arctic and we are joined by the Hoover Institution at Stanford, which is looking at some of the security and maritime challenges posed by a melting Arctic Ocean.

In 2012, we had high prospects that finally we would see development of oil and gas drilling in the Arctic and it looked like events were imminent for that to occur. However, now with the recent accidents of Shell and views expressed by other oil

companies such as Total, questioning the very viability of drilling in the Arctic. I think we are looking at a new horizon, the end result of which is not yet fully apparent.

With an estimated 20 percent of the world's undiscovered oil and gas resources and vast mineral assets, the Arctic represents a formidable opportunity for our planet struggling to meet the demands of a rising and more fluent population and as climate change makes more of the Arctic accessible, the implications for global trade are as significant as those for resource development. New potential maritime routes, though hither to impassable Arctic waters, promise to reduce shipping times and costs and accelerate ties between major commercial centers in the western and eastern hemisphere.

However, with the opportunities available in the Arctic also come unprecedented challenges, none of which we should minimize. Development of natural resources and an increase in commercial activity will require responsible oversight to minimize the environmental impact and quite honestly, the allocation of much more vast resources to our coastguard and other government authorities to make sure that any developments is done responsibly.

Operation of advanced exploration and production technology in some of the world's most difficult conditions will come with unprecedented challenges with regard to emergency responses. Increases in shipping activity, including tourism in the region, will increase the risk of maritime incidents in one of the most remote on the earth. Given the harsh conditions and the disputed nature of the Arctic territory, any environmental incident would require an international framework for response and search and rescue capabilities.

And then there is the critically important issue that is the focus of today's event, the Arctic is home to unique human communities whose livelihoods are likely to be

challenged by both the effects of climate change as well as increasing external human activity in the region. Increasing severity of natural hazards such as the hurricane-strength winds in November 2011, growing erosion, fine permafrost and increasing floods are likely to lead to displacement of people and communities in the region which are, of course, already occurring. Although there has been little systematic research into the potential displacement of people in the Arctic region, this is expected to be one of the major impacts of climate change in the regions and we are delighted that today's session will seek to begin this discussion and inform the rest of us who do not have the vast experience of our three very distinguished speakers.

Thank you very much and I will hand it back to Beth.

VIDEO: Thank you of the opportunity to present even though I cannot be with you in person today. From our full paper, I focus here on migration and locations of resource extraction for indigenous Scandinavians. The term Scandinavia refers to Finland, Norway and Sweden and these three countries have one indigenous group, the Saami. Including a small population in Russia, the Saami number about 50,000 to 100,000, representing approximately 5 to 10 percent of the population across Arctic Scandinavia. Saami are frequently associated with reindeer husbandry as a livelihood but perhaps only 10 percent are actively involved in it. In the next presentation, Marius will cover reindeer herding focusing on Norway

Other traditional Saami livelihoods have been fishing and farming. Today the Saami often combine their traditional livelihoods with town-based work such as in government or with a business or research. Tourism-based livelihoods are becoming increasingly popular with the tourists coming to learn about the Saami and to see the Saami way of life, especially reindeer herding. That includes through a UNESCO world heritage site in Sweden.

Using natural resources in Arctic Scandinavia has frequently impeded traditional Saami livelihoods. The three central governments have a long history of ignoring indigenous interests, of pursuing assimilation programs and forced displacement and of not acknowledging indigenous rights. Recognition and consultation are much better today, but disputes and differences of opinion continue regarding Sammi rights. Areas of conflict include water resources for hydroelectric power along with forests for logging. Climate change is suggested as making Arctic minerals more accessible, both onshore and offshore. Oil and gas are particularly prominent but other minerals such as gold and copper and diamonds are part of mining exploration.

Resource extraction promoted by the national governments in the South has long run afoul of Saami interests. By taking away grazing land and by interfering in reindeer migration routes, mobility as a climate change adaptation strategy is adversely affected. It is not about banning resource extraction, but ensuring that Saami are consulted about use of their land and have sufficient control over decision-making. That should factor in all Saami interests, reindeer herding and otherwise. Without that, then the Saami will feel increasingly disconnected from their land and their heritage. That weakens ties which keep them in the Arctic and opens up possibilities for moving away. This sequence for out-migration is far from certain but it does tend to be observed as part of migration patterns. More prominent impacts on Saami are expected to result from migration into the Arctic due to resource extraction. Even where exploration and development of oil and gas happens far offshore, communities and livelihoods on land are influenced due to offshore workers moving in and out along with the need for onshore processing, storage, and transportation facilities, plus the threat of spills.

The population in Arctic communities is expected to expand. Not just from the temporary workers moving in and out, but also from those who seek to establish

or join businesses to gain from the petroleum boom. The petroleum companies state that they are recognizing these challenges and are working with the communities in order to deal with changes in the population dynamics. Companies stipulate requirements that contractors, suppliers and their sub-contractors should develop a local presence and acquire goods and services locally. They also support local higher education institutions and employ the coastal fishing fleet in oil spill response, which supplements fishing livelihoods.

Consequently, the economic boost could provide the incentive to maintain Saami traditions with or without more tourists coming to see Saami culture. The other side is that the Saami might be drawn to petroleum or related industries for the income, thereby leaving behind traditional hunting, fishing and herding. That might be considered to be not necessarily bad, but nor is it necessarily good. It is an impact of climate change leading to resource extraction opportunities which in turn lead to increased dominance of outside cultures and outside agendas rather than local Arctic cultures and interests.

Migration decisions will be influenced, but that could potentially also be non-Arctic people choosing the Arctic land and lifestyle. Similarly, education in the South and exposure to non-Arctic people can strengthen ties to tradition, convincing Arctic people to stay or return North. As a principle the Saami do not oppose others moving into the Arctic permanently or temporarily, nor are the Saami opposed to the principle of resource use whether that be petroleum, mining, forestry, fish, hydroelectricity, or others. They are opposed to decisions being made without Saami input and to outsiders taking over Arctic locations and resources without respecting those living in the Arctic already. The key is full and fair participation of Saami and other Arctic residents in decisions affecting them.

Because overall with respect to resource extraction, the environmental and social influences of climate change on Saami migration in Arctic Scandinavia highlight that climate change itself will have limited impact on migration and it is not likely to directly cause that much displacement. Instead social and governance structures influence livelihoods in such a way that adaptation options tend to be more limited. No migration outcome is certain but it is likely to depend on how well the changes are managed internally. That means working collaboratively to ensure that indigenous interests are respected and that indigenous needs are met without blocking the involvement of others in the Arctic.

Thank you and please feel free to contact me with any feedback or questions.

VIDEO: First of all, I would like to thank you for opportunity to give this presentation. I will follow up on Ilan's presentation by going more into detail on how official policies may impact the Saami reindeer herders in Northern Norway.

From a general point of view, the Norwegian government aims a developing an economic, ecological and cultural sustainable reindeer abundance. Stability in this context refers primarily to reindeer abundance. The underlying rationale is connected to the recent increase in reindeer abundance: the number of reindeer in Norway, especially in Finnmark, has been characterized by considerable temporal variation. After the Second World War, there has been an upward trend in numbers that peaked in the late 1980s or early 1990s, decreased until 2000/2001 and increased in recent years. Two important tools are used by the government to stop this trend.

First and foremost, they utilize several economic incentives and subsidies aiming to stimulate reindeer herders to slaughter as many reindeer as possible;

and, secondly, which is the one I will talk about here, they are redistributing common winter pastures to smaller units.

The Norwegian Ministry of Agriculture and Food provides the underlying rationale for this process: fixed boundaries that are respected and that do not violate rights established on special legal basis is a fundamental prerequisite for achieving a sustainable reindeer husbandry. Originally the redistribution aimed at reinstating power to traditional cooperative groups, namely the siida system, by focusing on giving siidas exclusive user rights to specific winter areas. While not much cause for concern in itself, the point I wish to emphasize is that the legal consolidation of siida user rights may be a step towards privatization of previously common grazing areas. Importantly, privatization is often followed by exclusive use. Historically winter pastures were informally regulated according to siida membership where herders had a clear understanding of the fact that different winter pasture areas belonged to different siidas. But when in need everybody had a right to access alternative pastures. The theoretical rationale for privatization is connected to the idea that property rights work as an incentive for sustainable land stewardship.

This process is on-going in Norway and as such not much evidence exists as to how this may influence herders. Nevertheless, considerable evidence from both Africa and Asia suggests that while privatization has often been launched to counter degradation, the opposite has been the case because privatization results in intensification because grazing is undertaken all year round in smaller parcels of land. At the same time, evidence also suggests the privatization has resulted in increased differences between rich and poor, mainly because rich herders usually are in a power position and have been in a position to secure the largest and best tracts of lands. As privatization precludes reallocation of grazing areas the distinction between rich and poor

herders is maintained. Importantly, privatization is a source of fragmentation of rangelands, meaning the dissection of natural systems into spatially isolated parts. This again restricts the movement of both people and livestock and as a consequence, the ability to respond to environmental variability has decreased.

Furthermore, private grazing areas often need to be protected from encroachment by other herders. Consequently, both time and money have to be spent on monitoring or the erection and maintaining of fences.

Similarly, while clear boundaries are often assumed to decrease conflicts, the opposite has also been the case and where fuzzy boundaries have been argued to be open for negotiation while fenced in rangelands precludes negotiations.

Finally, privatization assumes that production is individually based and that privatization actually increases production efficiency. In contrast, pastoral production is often done collaboratively where both day to day herding and seasonal movements are undertaken together with neighboring households. As such, rather than increase efficiency, privatization may actually increase it.

It has been argued that by reinforcing the traditional strategies, pastoralists have developed to deal with climate variability, the economic, social and cultural wellbeing of pastoral societies can be supported in the face of climate change. Moreover, a case has been made that pastoralists are in a unique position to tackle climate change due to the expensive experience managing environmental variability and it has been argued that the ability to withstand environmental shocks is a defining feature of pastoralism.

As seen, comparative evidence indicates that rather than helping to alleviate possible problems related to climate change, governmental policies reduce the ability to flexibly respond to environmental variation and in the end, it may be official

policies and not climate change *per se* that represents the greatest challenge for pastoral adaptability. I'd also like to point to the fact that it has been argued that properly maintained rangelands are estimated to store up to 34% of the global stock of CO_2 . Moreover soils represent the earth's largest carbon sink that can be controlled and improved—even larger than forests— and where grassland management is the second most important agricultural technology available for climate change mitigation. Additionally, appropriate pastoral resource management has been recognized as favorable for: one, biodiversity conservation; and two, sustainable land and water management. In other words, appropriate management may not only benefit the pastoralists themselves, but may very well have important impacts for climate change mitigation in general. Key barriers are official policies that disregard the inherent logic of pastoral strategies.

Thank you very much for your attention and please contact me if you have any feedback or questions.

MS. CRATE: Thank you, all, for being here this morning. Special thanks to Beth, Leah, Daniel, and others at the Brookings for taking on this important issue.

My name is Susie Crate. I'm at George Mason University in Fairfax, Virginia.

And for the sake of time and to harness my tendency to go off on verbal tangents, I'm going to read my text. Beth asked me to begin by sharing some of the particulars of the Siberian experience, so, I'll start off with four maxims and some historical developments that work to affect contemporary mobility in the context of climate change.

Russia is the largest country in the world, home to a wide range of ecosystems, encompassing 11 time zones and most of the continuous shoreline in the Arctic. With over 100 non-Slavic ethnicities, here, color-coded, bi-language families.

The second maxim is that Russia's massive size and range of peoples makes it the most ethnically diverse of the circumpolar eight. Due especially to the military industrial development of the Soviet Period, the Russian north has the highest percentage of urban population of the circumpolar eight. Those are the eight circumpolar countries. And following, it has the highest ratio of non-indigenous to indigenous peoples in the north.

Historically, mobility was the rule for the various groups of northern Eurasia, whether hunter gathers, nomadic reindeer herders, or semi nomadic horse and cattle breeders, they all depended on mobility for the flexibility to adapt to annual and seasonal patterns and shortages. But as Russia expanded its territory 100 times from its base in Kievan Rus to the north and the east, it colonized and demanded a fur tax from the local inhabitants, annexed indigenous territory for Russian empirical use and forced inhabitants to convert to Russian orthodoxy.

Although Russian colonization affected mobility, the Soviet Period snuffed it. Industrialization, exploiting Russia's natural resource wealth and the collectivization and gradual industrialization of agriculture worked to concentrate inhabitants into denser and denser settlements to produce efficiently.

An example here showing traditional sediments and then the effects of such consolidation on the coast of Chukotka. Soviet collectivization policies further affected indigenous livelihoods and mobility by forcing children to go to boarding schools and concentrating what were once extensive practices into one place. The impact of

these changes have to date a far greater effect on contemporary livelihoods than climate change has so far.

Let me take you into the experience of one group, Viliui Sikha, Turkish-speaking horse and cattle breeders, whose ancestors migrated from central Asia around 900 A.D. to the shores of Lake Baikal in southern Siberia, and in the Genghis Khan period, they followed the Lena River north to their present place of habitation. Viliui Sikha inhabit the Vilyuy River regions of the western part of the Sakha area.

The main biome is taiga or boreal forests dotted with alaas. Okay, some of the words got lost in translation into this system. The main biome is taiga or boreal forests dotted with alaas circular lakes bordered by hayfields that transition to taiga. And the Viliui Sikha adapted their southern subsistence of horse and cattle breeding to the extreme climate by keeping cows in barns nine months of the year and harvesting substantial hay for their fodder during the summer.

I've worked on various projects with Viliui Sikha community since 1991. And since 2006 on issues of climate change. Through focus groups and interviews, inhabitants came to consensus on these nine main changes.

Viliui Sikha do not have to relocate yet due to these changes, but their refined adaptation to the extreme climate is being affected. To illustrate, I share two examples. First, Viliui Sikha wait until temperatures are below freezing continuously to do their annual slaughter. However, with an elongated fall, slaughter is now delayed a month, requiring another month of hay fodder for the animals intended for slaughter and a month without meat on household tables.

Second, they store most of the oton berries harvested in the fall in cardboard boxes in an out building to gradually freeze and then eat frozen throughout the winter. But due to the fall's now rhythm of freezing and thawing, the berries turn to mush.

Again, very subtle changes in seasonality and climate have a dramatic effect on these refined adaptations.

Perhaps most concerning to inhabitants is the increasing water on the land, which interferes with haying, transportation, housing, and forest health. Pictured here is a hayfield. The pen in the center is used to protect the final haystack from wandering horse herds until it can be transported into the village. Notice how the hay grasses are being replaced by aquatic vegetation. Not only are Viliui Sikha's refined adaptation strategies failing, but the land under their feet is literally transforming.

There are some efforts by the government to drain the water, but most fail since there is little or no relief on the landscape. Our collaboration with regional scientists shows that the increasing water is due to a combination of change to precipitation patterns and the warming and degrading of permafrost, which is causing not only increasing water, but also the land to sink and rise, which threatens the future for Viliui Sikha not only if they want to continue their historical subsistence of horse and cattle breeding, but also their continued habitation of the area.

When asked if they would move if conditions did not allow them to continue their subsistence, a majority said they would rather change their practices and stay in their homeland. This then produces new questions about future actions in response and also implies the deeper psychological effects of relocating peoples with an ancestral attachment to place. Additionally, how is the latent fear generated by these changes affecting inhabitants and their capacity to adapt and maintain their livelihoods?

Other cases within the Sakha Republic inform both the Viliui Sikha experience and that of all of Russia's indigenous people facing climate change. The first illustrates the importance of making appropriate relocation plans. Due to the catastrophic

flooding of the last decade, the Sakha government began relocating the most affected settlements.

The Town of Kyllakh, located literally on an island in the Lena River pictured here, was one of the first. Relocation began in 2005, but to date has not progressed largely due to two factors: failure to find a comparable place with all needed hayfields and pasture lands for inhabitants to continue animal breeding and failure to provide enough financial assistance for the majority of the community to move.

The second example shows the importance of developing an early warning system. The Sakha government has been handling increasing emergencies through their rescue service. Since 2007, the service has utilized an early warning system that allows communities such as pictured here an early warning to evacuate before the event reaches catastrophic levels. Since 2007, they report they have not lost one human life.

The last example to inform issues of mobility for Russia's indigenous peoples in the face of climate change illustrates how the diversity of livelihood practices are affected. Within the Sakha Republic live other indigenous peoples, Even, Evenk, Yukagir, Chukchi, Downgon (phonetic 00:32:49), all of whom either herd reindeer or forage. Although they have more flexibility than Sakha to respond to climate change by finding new pasture of other forage areas if their regular places are unusable, climate change is also affecting their ability to move since it's degrading the permafrost, changing seasonal timing, and the like.

In sum, the Viliui Sikha case and these other three cases all from within the Sakha Republic drive home important lessons for understanding mobility in the face of climate change across the Russian north. First, that Viliui Sikha, like their counterparts, are observing and responding to changes, however although perhaps not

needing to relocate yet, their livelihoods are increasingly challenged and threatened into the future. Understanding how livelihoods are affected and a community's attachment to their own ancestral homelands is key to proper responses.

Next, if a community such as Kyllakh decides or is told it must relocate because their present living area is becoming uninhabitable, sufficient research ideally in collaboration with the affected communities must inform an appropriate resettlement site where inhabitants can continue their practices.

Third, with increasing emergency situations, early warning systems are needed to enable evacuations of settlements in a timely fashion.

And, lastly, livelihood type is a critical consideration in understanding a people's need to move or stay and their capacity to adapt to change.

Thank you very much. (Applause)

DR. BRONEN: Thank you very much, Beth, Daniel and Leah for inviting me here from Alaska and the Brookings Institution for taking on this really critical issue that has been occurring in the state in which I live now for almost a decade. So, I'm just going to repeat some of the information that Beth outlined about the climate change impacts happening in Alaska because the media has popularized the movement of people as climate refugees, which is really an inaccurate term to describe the type of movement happening in Alaska. And it's occurring because of extreme weather events that are repeatedly occurring which are accelerating slow ongoing changes.

In Alaska, the temperature has already increased 3.5 degrees Celsius since the 1950s, which is causing the permafrost to thaw and as Beth mentioned, we just had another record low of Arctic sea ice. When I decided to go back to graduate school in 2007, climate scientists were saying that there would be no Arctic sea ice at the earliest in 2050 and most probably by 2100 and now they are saying there may be no

Arctic sea ice during the summertime by 2020. That will radically impact coastal communities in Alaska.

So, the federal government and the state government in Alaska have been documenting and analyzing the problems in regard to community habitability in Alaska since 2003, and the Government Accountability Office issued the first report in 2003 and found that 86 percent of communities in Alaska were being affected by erosion and flooding. What's significant about that report is at that time in 2003, there were only four communities that were thinking of relocating, and I'll probably repeat this a few times because it's really important to understand that the communities themselves have made the decision that relocation is their only adaptation option. So, in 2003, there were 4 communities that were thinking of relocating and in 2009, which is the last year that the GAO did the report, that had tripled to 12.

So, the 12 communities were broken out in regard to those that were going to relocate in their entirety, which were 4, and those that had potentially higher ground that they could relocate to within close proximity and those were 8. What's important to know about Alaska is all of these communities are not connected by road. They're all indigenous communities, either Yupik Eskimo or Inupiat Eskimo. In the interior, there are Athabascan Indians and the community sizes range from anywhere between 75 people to approximately 1,000. The remaining part of this presentation is going to be about the three communities that have decided to relocate because they have been desperately trying to relocate now for decades.

Shishmaref has gotten a lot of media attention. It is located just below the Arctic Circle and as I mentioned previously, there have been repeated extreme weather events that have caused federal and state disaster declarations. The other critical piece about the relocations in Alaska is that the traditional methods of disaster

relief are not working. So, in Shishmaref, they spent $16 million trying to build seawalls to protect the community from the storm surges that are occurring now in the fall. Storm surges used to occur in the summertime when there wasn't Arctic sea ice, but now the seasons are extending because of the lack of Arctic sea ice which used to buffer the coast from those storm surges.

In 2002, the Shishmaref community created a coalition with their state government representative, their borough representative, and they voted on a relocation site. The problem is because there's no relocation institutional framework, to tell communities what they need to do to relocate, the community voted on a relocation site that later government reports found was on thawing permafrost, and, so, would not be a good location for them.

So, as of this time, the community is still searching for a relocation site. They are still being threatened by those storm surges, and their community is completely uninhabitable. And I say that because they have saline intrusion coming into their potable water system; they don't have running water in their system, it's through a tank and they have their sewage system, which is a sewage lagoon, where people take five-gallon honey buckets and dump their sewage is eroding into the river.

Kivalina is another community that's just north of the Arctic Circle and it also has been trying to relocate now for decades. As you can see, there were numerous repeated extreme weather events. Charles mentioned the most recent one, which was in November of 2011. It was the largest Bering Sea storm ever recorded. There was actually a more recent disaster declaration that was issued last year in 2012 because of excessive rain, precipitation that caused so much salt in the river located next to the community that they weren't able to get drinking water and it delayed the opening of their school by several weeks.

Kivalina is also a really good example of how erosion control methods don't work. So, in 2006, they had just completed a seawall that cost the government several million dollars. Our U.S. senator flew into Kivalina to celebrate the completion of the seawall and right after they arrived, there was this huge storm that came in that destroyed almost 200 feet of that seawall.

So, they cancelled the celebration and then a year later, in 2007, there was another extreme weather event and 250 people in the community needed to evacuate. They said that it was so dangerous, their evacuation -- Kivalina's on a barrier island, there is no higher ground near them -- that they would never try evacuation again. So, the other piece that's important to know is even when these extreme weather events happen, there's no higher ground for them to go to. They're isolated, rural communities where primary access is by small plane.

The community has voted three times to relocate. They also, similar to Shishmaref, have chosen relocation sites that later government reports have found have been on thawing permafrost. They may have just found a relocation site which isn't on thawing permafrost, and, so, everybody is really hopeful that this will be the place where the community will be able to move. And relocation, as Susan mentioned, is highly complex, which is why these communities are orchestrating their relocation and making the decision of where they are going to relocate because their ability to continue to subsist is critical.

So, the last community that I'm going to talk about is Newtok, which was the subject of my dissertation, and I've been working with the Community of Newtok now since 2007, and they were the focus of my dissertation because they are actually relocating their community despite all odds. So, again, repeated extreme weather events with disaster declarations, erosion control methods that were tried and failed.

They are in a public health crisis because of the lack of potable water. It's almost 30 percent of the children had respiratory illnesses in a report that was done by the local clinic in 2006. Their barge landing, which is the primary way that they can get fuel into the community, was destroyed. So, they don't have barge access except for very short periods of time during the summertime and, again, similar to Shishmaref and Kivalina, they don't have running water in their homes. They use five-gallon buckets for sewage that they dump into a sewage lagoon, which is now melting into the river from which they get fish to subsist.

Despite all of those challenges, the Newtok Traditional Council, which is the sole governing body of the community, has done an absolutely remarkable and extraordinary effort to relocate their community. So, they hired a lobbyist several years ago who went to Congress who authorized a land exchange between U.S. Fish and Wildlife for their preferred relocation site which is nine miles south of where their current community is along the Ninglick River. Their community voted on the relocation site several times. And they've been documenting for government agencies the impact on erosion to get government agencies, both federal and state, onboard with their relocation effort.

So, in 2006, the Newtok Planning Group was created. The Newtok Traditional Council is leading the Newtok Planning Group, which is comprised of about 25 different federal and state government agencies, none of whom have a mandate to relocate the agency, but all of them are working voluntarily together to figure how to get the people of this community safe. The barriers for the relocation effort are enormous. I continue to go to all of their meetings and every time I go, I work as an attorney and I am just stunned by how challenging the relocation effort is.

So, just as an example, at the last meeting I was at, as I mentioned, no road access. They need an airstrip, obviously, to get safety if they have illnesses or just to get in and out of the community. Well, because there's no population base at their relocation site, there's no infrastructure there either. They're not on the priority list. There are other communities with populations that are higher up on the list who need access to state funding for airstrips. So, until they move some people to the relocation site, it's going to be really hard for them to make the state prioritization list to get the funding to build an airstrip.

The Alaska State Government has done an exceptional job with really limited resources to try to figure out what sort of methods and programs could be put into place to help communities. And, so, one of them was the Climate Change Impact Mitigation Program which has been providing funding for communities to try to do more strategic relocation planning and then through a recent grant that they just got through U.S. Fish and Wildlife, they're going to use that to try to create these multidisciplinary coordinating working groups to work with Shishmaref and Kivalina to facilitate those communities' relocation.

And, so, I used all of this data that I've been collecting now since 2007 to try to figure out what we need to do in the United States so it's easier for communities that need to relocate because of climate-related impacts to have that happen and I was here during Hurricane Sandy. I've been paying attention to all the conversations happening in New York and New Jersey, and, so, what's happening in Alaska is really relevant to coastal communities all over the United States.

And, so, one of the pieces is this relocation framework has to be based in human rights doctrine and what that means is the communities themselves need to be making the decision that relocation is truly their only adaptation option. There's been a

lot of research done about the trauma that is caused and the poverty, the impoverishment of communities after relocation and the only way to avoid that possibly is if the communities themselves are making all of the decisions about where and how they relocate.

The other challenge in the United States is that our disaster relief legislation is really anachronistic for lots of different reasons, but particularly in this situation, it does not allow for communities to access disaster relief funding for relocation effort. And, so, what I've proposed is what I call an adaptive governance framework where you start, of course, with protection in place because that is the priority and then if it's not possible for communities to be protected in place because storm surges are higher, because of sea level rise, we do not have the technology to do the erosion and flood control that needs to happen, then you gradually move to a relocation effort.

And understanding that this is really complex, when I give talks, people always say to me where is everybody going to go in Boston or New York? And I don't have answers, but those are the questions that we need to be asking and figuring out answers to because if sea level is going to rise as the scientists predict, we need to be thinking now of what we're going to do.

So, one of the pieces for this dynamic adaptive governance framework to work is we need to be coming up with indicators of when it's really no longer possible to protect people in place. And, so, repetitive loss of infrastructure is one of the indicators. If infrastructure is repeatedly damaged and destroyed, it's very likely that the folks who are building that infrastructure are not going to want to make that investment again.

Obviously, if community residents continue to be in danger because you can't build a sea wall to protect them from extreme weather events, and then the public health indicators, saline intrusion is going to be a fact for coastal communities and is it

going to be possible for those coastal communities to continue to have access to potable water?

So, some of the recommendations are to amend the disaster relief legislation which is currently the Stafford Act in the United States that guides all the work of FEMA to allow for this adaptive governance framework and then we need a relocation institutional framework, we need something on the federal level, some governance structure on the federal level to facilitate communities and states who are navigating these really, really complex issues. Thank you. (Applause)

MS. FERRIS: Okay, well, thank you very much and thanks both of you for your presentations and long distance to Ilan to Marius, speaking to us from Norway.

What I took away from these different papers was the complexity of the issue of the relationship of indigenous people, climate change and displacement or relocation. I mean, we heard from Robin probably the most dramatic case of communities that need, that have decided to relocate because of the effects of climate change, but in other cases, it seems like it's a more subtler or a longer term relationship.

A study that was done in Scandinavian Arctic, for example, found that a major threat posed by climate change is the movement of non-indigenous peoples into the far north to work on energy development and the impact that could have one way or another on indigenous cultures and so on.

I wondered, Susie, if you wanted to comment a bit on the reaction of indigenous peoples in Siberia, what efforts they're making to address climate change.

MS. CRATE: That's a very good question, Beth. And the first thought I have in response to that question is that to some extent, the people in these rural areas, unless they are teachers or elders who read every newspaper that they can subscribe to, their mind is not very focused on 10 years from now, their lives are very immediate,

they're very much in the day, the week, the moment. Adapting as they can to the changes.

In the settlements where I work, it's more and more challenging every year to get enough hay to feed their animals. So, when we do our research, it's also very important which is something that a colleague of ours, Beth Marino, has documented fairly well. We don't use the term climate change because it brings in all kinds of ideas of what that means. We talk generally about change. And then you can, as somebody who knows about climate change and working with, collaborating with regional scientists who are -- for example, the permafrost scientists that I work with, you can tease out the changes that people are observing and understand what of those changes are more than likely from climate change or definitely from climate change.

But I guess the general response to your question is that climate change is not the only change that these communities are facing, and, so, in addition to it not really being on their radar to be thinking about 10 years from now, they're also dealing with in the Russia context the increased unlikelihood of really developing viable, local economies and also the outmigration of youth. Our young people leaving the villages which is something that's happening in rural areas across the world.

So, again, to the extent that we're talking about climate change in this forum, we can't remove it from all the other changes that these communities are -- see, I told you I go off on tangents. Didn't I warn you about that?

DR. BRONEN: I think it is the interaction of these other social and economic factors together with the effects such as the storm surges and erosion and so on.

MS. FERRIS: Why don't we open it up for questions and maybe we'll take three or four and give you two a chance to respond? We'll do one, two, three on this side and then we'll move over here.

MS. ROSHELLE: I'm Helen Rochelle (phonetic 00:54:54) with Resources for the Future.

MS. FERRIS: Can you stand up?

MS. ROSHELLE: It seems very sure that with the next couple of decades, people of the lower 48 on the east coast and west coast are going to be facing the same kind of problems. Fortunately, we don't have such a locked in socioeconomic culture where we are accustomed to moving around the country, but I'm appalled that there are no cameras here, no CSPAN, nobody else that's trying to tell the people down here in the lower 48 that we're going to be facing these problems and it seems to me that educating the Americans in general is a very important project that should be a continuation of what you're doing.

MS. FERRIS: Thank you.

Yes, please?

MR. BLASIME: Thanks, my name is Rich Blasime (phonetic 00:55:47), a freelance environmental journalist, and thanks for this excellent event and excellent presentations.

I have a question for Dr. Bronen. Kivalina is also the noted federal case which I guess was lost, but there will be an appeal and I'd like to ask how that figures into the picture and how those actions might link to human rights basis.

MS. FERRIS: Great, thank you, and the woman in the orange jacket.

MS. PEARL: Hi, I'm Jenna Pearl. I work at the State Department in the Canada office.

I was thinking about timing, not so much the -- because I don't think we can go into the scientific specifics, but not so much the timing of when will the permafrost melt, for example, or what's the rate of it melting, but more you were talking about a legal infrastructure for deciding helping communities move, relocate if they need to.

So, if you're going to do that, how do you figure out well, it's worth it to spend federal money to relocate this community to a place that is going to last for X number of years? Where our legal infrastructure sort of assumes that communities are forever. We don't think about New York or some other places going away.

So, how do you sort of pick a timeframe that says we're going to spend money to move this community for a place we predict will be there and settled for 10 years, 100, 1,000 years. I mean, how do you include that in the calculus of is it worth it to help communities relocate? Is it worth it to work on sea walls or whatever the mitigating structures are? How do you incorporate that into the legal structure? Thanks.

MS. FERRIS: Okay, maybe we'll return for a response and maybe we'll start with you, Robin.

DR. BRONEN: Sure. Well, thank you so much for the excellent questions. So, first of all, absolutely, there needs to be more public education and it's why I'm very passionate about these issues because I've been watching what's been happening in my state now for years. And it's time for us to wake up.

In regard to the Kivalina lawsuit, so, part of the challenge has been that we don't have a legal framework. And, so, Kivalina got totally frustrated by the lack of anybody in the federal or state government really facilitating a plan for them. And, so, they're using that lawsuit to get the money because they think if they can get the money, then they'll figure out their own relocation effort. And, so, there isn't human rights implications in that lawsuit, it's really about holding the oil and energy companies

responsible for the fact that they need to relocate and then getting them money so that they can do that.

And in regard to the last question, that's a really, really important question. And, so, in the situation in Alaska, the U.S. Army Corps of Engineers did multiple studies asking those exact questions for the communities and outlined how much it would cost for erosion or flood control and how much it would cost to relocate.

Now, the challenge with the reports, which were done in 2006 and 2009, is because a relocation of this type has never occurred before, they in my opinion, and they would actually also admit it overinflated the cost meaning that it was entirely incumbent on the federal government to do the relocation effort and the reality is based on what Newtok is doing is they're using existing funding streams. They've gotten very, very little new money to facilitate their relocation because this piece about the timing is really important because communities get access to funding for health clinics, schools, I mean, things that are part of the public infrastructure and when it becomes no longer viable to rebuild that school or clinic in its current location, those funds could be used at a different location. The challenge is we don't have a framework, a legal framework to do that. The disaster relief legislation doesn't make it possible or else Newtok would be already relocated.

MS. FERRIS: Okay, let's take another round of questions. We'll have one, two I guess on this side.

DR. BALZER: Hello, Marjorie Mandelstam Balzer, Georgetown University.

I have a question for Susie Crate. Hi, Susie. And the question has to do with energy companies, more and more coming into not only Sakha Republic, but also throughout the north of the Russian Federation, and the recent suspension of the group

called RAIPON, the Russian Association of Indigenous Peoples of the North, Siberia and the Far East, that's the main umbrella organization to defend indigenous rights. And, so, I was wondering if people are talking about it in the communities that you know and whether you think that this suspension is significant and whether things like indigenous politics at a higher level can be turned around.

MS. FERRIS: Yes, next question. Did you have a question? Yes. Why don't you wait for the microphone, yes.

SPEAKER: In a way, I almost want to build on Dr. Balzer's question. I appreciated all of the remarks. I think they were excellent, including those in *abstentia*. That everybody was talking about a different piece, kind of like looking at the elephant, if you will, of the same process or series of challenges having to do with climate change and as was just pointed out, more deeply in terms of the relationship of the oil and gas industries with respect to exacerbating or accelerating change and the kinds of standards norms, principles, governance processes that are evolving Arctic-related and whether it's indigenous or not in a certain sense, we're all human beings on the planet and have impact, Stafford Act having not been invoked in the gulf, for example.

I wonder if you could describe the various dimensions that you're all dealing with in the context of moving toward the kinds of standards, Arctic wide and nationally specific that might contribute to making a difference to this particular dynamic. Thank you.

MS. FERRIS: Thank you.

Other questions? Take a couple more. Yes, this is an active row here. Yes, please. (Laughter)

MR. SCHAAR: Yes, Johan Schaar from World Resources Institute.

To Dr. Bronen, you did not say so much about changes in the livelihoods of people, the people that you described. Could you say something about that? And also changes in the ecosystems and natural resources on which these people depend, such as fish stock, et cetera.

MS. FERRIS: Thank you. Another question. Yes.

SPEAKER: Thank you. Hi, I was just curious the status of relocation of these villages, if any of that actually -- which do you think will be the first to relocate? Have any actually moved to date? Have they actually got formalized 10-year plans? I understand that funding challenges. And if you anticipate more villages deciding and voting that they have no other option but to go this route?

MS. FERRIS: Susie, do you want to start with the question on RAIPON?

MS. CRATE: Sure. Just a little bit of background for those who don't know, in Russia in the Soviet Period, the non-Slavic groups were separated into minority peoples and titular nations based on population size. So, under 50,000 were minority peoples, RAIPON, Russian Association of Indigenous Peoples of the North, were specifically with those smaller groups.

To the extent that Sakha, or between 350 and 400,000 strong, they like the Buriats and the Komi and the Tuvans are not in the RAIPON designation which has its plusses and minuses. I think that there's a lot that can be done through RAIPON, the Russian Association of the Peoples of the North, basically established in the last few decades became an official federal NGO. No, wait a minute, that doesn't make sense. Anyway, became an official organization. To some extent, they have brought the issue of climate change to the forefront as one of their main issues that they're trying to work with with northern indigenous peoples, but to some extent, they also don't have a whole lot of let's say presence and power in the situation.

In response to the question of whether the people that I work with are talking about it, Sakha are not talking about it for obvious reasons and my colleagues at my in-country institute have not mentioned it to me. Perhaps there is something RAIPON can do. I know that they've been quite active trying to bring the issue to the attention of the government. I'm not quite sure what exactly the results of that attention have been. I believe that more can be done on the local level working in the communities and I can speak a little bit more about that later if desired.

And as far as I understood your question was more -- the woman on the other side, what is your name?

SPEAKER: Anita (inaudible).

MS. CRATE: Anita. Your question about sort of trying to understand some way that the circumpolar north can have some protocols or standards as far as energy development is concerned, well, energy, of course, the Arctic is in many ways the final frontier now and increasingly accessible as the Arctic Ocean becomes ice-free, which gives me huge concerns because I see accidents, I see the invasion into indigenous ways of being, et cetera. But I would say that on a circumpolar level, we're talking such different geopolitics as far as how Russia, how North America and how Scandinavia would be dealing with these issues, a lot of work is being done through the Arctic Council. I would recommend that you look and see the work that they are doing, very easy to access that information.

MS. FERRIS: Robin, do you want to respond to the questions about livelihoods and the actual present status of relocations?

DR. BRONEN: Sure. So, in regard to the livelihoods, the communities are still primarily subsistence. So, they rely on the fish and wildlife that's in there or near

their communities and that's why the relocation is so critical in regard to where they relocate because they want to maintain that lifestyle.

And in the communities that I mentioned, Shishmaref, Kivalina, and Newtok, the changing migration patterns, for instance, of fish and caribou have not yet impacted their ability to subsist for those foods and it is a conversation that's happening in Alaska, but not in those communities that are looking at relocation. And, so, I think the thing that's significant about what's happening in Alaska is that there's really no other reason for these communities to relocate. They would be staying where they are if it were not for climate change.

And in regard to the question about has any community relocated, Newtok is relocating. So, as I was mentioning, so, their relocation site is called Mertarvik, M-E-R-T-A-R-V-I-K, and they have built a barge landing there, they've build a foundation of an evacuation center that they are planning to be their multipurpose center so that families can start moving there, so that they can demonstrate to these funding sources that they do have a population base to get an airstrip and a school and the whole issue -- so, I mentioned that in the U.S. Government Accountability Office, this 2009 report where there were 12 communities that were identified as looking for relocation and when I was doing the paper for this project, there's not a lot of really detailed information about those other 8 communities, of why they made it to this list of 12.

And what I can also tell you is that one of the communities whose been on the list of imminently threatened now since 2003, now desperately wants off the list because they can't get money for the needs of their community. Government's going wait, you want to relocate, why are we going to invest in your health clinic if you're going to be moving, but moving's not for decades to come. And, so, it's a really complicated issue that we need to have a governance framework to address so that communities

aren't scrambling and in a humanitarian crisis because they're not getting the resources that they need.

MS. FERRIS: I might add that internationally, particularly at the U.N., those working on humanitarian issues, there's growing concern to come up with basic human rights principles to guide these relocations. The record isn't very good when you look at relocations because of development projects, though the World Bank has safeguard policies and so forth, but to adapt some of those or to learn from some of those experiences so that when relocations occur, as they are likely to do in the future because of the effects of climate change that there's some guidance there.

Other questions? Charley, we'll go one, two.

MR. EBINGER: Two quick questions.

MS. FERRIS: Wait for the microphone.

MR. EBINGER: Two quick questions. Robin, in one of your slides, you had I think it was 25 different groups, authorities, tribal groups. Is there any way that we can rationalize organizationally either in the State of Alaska or at the federal level so that we cannot have 25 agencies involved and have a more rationale process?

And on the whole question of Russia and Alaska and the whole north, it seems while we're talking about the effects of climate change on indigenous people, do you sense that people are getting alarmed by the prospect that as the permafrost goes and the methane emissions go, I mean, the methane, if the whole permafrost goes, we don't need to worry about CO_2 because it'll be so much more deadly to the climate that this will be a catastrophe. And do you sense there's a growing concern about methane emissions from permafrost?

MS. FERRIS: Okay, another question over here. Yes, please.

MR. LEBANTHOL: Hello, I am Andrique Lebanthol (phonetic 01:11:56) from the World Bank.

And we mostly work with indigenous peoples in tropical countries like Indonesia, Brazil, where we generally let's say in relation to forest peoples, we believe that enhancing property rights is a way to go. I haven't done specific research, but other colleagues have done. But we generally believe that recognizing demarcating, sort of officially transferring property rights, indigenous politic communities is just an essential step, though it's enhancing their wellbeing.

So, I was particularly intrigued by Marius Næss's conclusions. Unfortunately, we cannot access him on the phone -- that privatization, which I assume it means transferring property rights to communities and individuals, has increased land degradations, reduced flexibility for adaptation, increased level of conflicts and eroded social networks because I think the consensus of the development community is that property rights are good.

So, I wonder whether any of you or all of you could comment on this in relation to Mr. Næss's comments. Thank you.

MS. FERRIS: We'll be happy to speak on his behalf. Other questions? (No response)

Okay, who would like to take a stab at these, rationalization of the number of agencies, impact of permafrost melting on methane? Property rights.

DR. BRONEN: Yes, so, absolutely, there can be less than 25 agencies and there needs to be. It's just we don't have a governance structure. So, all of these agencies are having to figure out what piece of the relocation puzzle they can help with New Talk's relocation. And we'll see with this new funding that just came into the state where they're going to replicate the New Talk Planning Group with Kivalina and

Shishmaref if there will need to be that number of agencies. And I think on the federal government level, we need some agency designated to do coordinating of a relocation effort and not do all of the work of the relocation, but to coordinate the federal government effort because one of the things that I didn't mention in my slides that's been a huge issue is the NEPA, the compliance with NEPA regulations and NEPA, there is no precedence for applying NEPA to a community-wide relocation. So, it's been this huge barrier for every agency that's wanted to do work at the relocation site because they don't want to take on the NEPA compliance issues.

And then in regard to the methane, the way that it most often gets discussed is with the fact that the permafrost is thawing. I mean, everybody sees the permafrost melting beneath their feet and depending on where you are in Alaska, it has different impacts. So, community residents in Newtok will tell you now they are below sea level, their community is, they will tell you, 30 feet below sea level. I don't know if that's accurate or not, but they are seriously sinking.

In Kivalina, there are huge slumps in the tundra that are causing serious problems for their water source. So, I mentioned that a disaster declaration was declared last year because of all the rain, but it was the rain coupled with the permafrost thawing that led to all the salt in their river that made it not possible for them to have drinking water.

MS. FERRIS: And do you want to say something about permafrost melting in Siberia?

MS. CRATE: I was going to say something about property rights and privatization --

MS. FERRIS: Okay, you --

MS. CRATE: But I can say something about permafrost melting in Siberia. Yes, as you may know, the methane issue I think has been brought to attention in the context of Russia because it's got the largest area of continuous permafrost on earth and if in fact or when that permafrost goes, there's been some experimental research. Terry Chapin led several projects in the northern areas of the Sakha Republic with methane bubbling up out of lakes and there was another project recently. So, it is occurring, the methane is escaping and it's a huge issue. I can't say that people talk about it because the people that I work with, they're more concerned about the land surface changing.

As far as property rights and privatization, those are in my mind two different things. I guess in the context of Russia, property rights, and I think perhaps in the context of the communities that you work with with the World Bank, privatization means land is for sale.

In the Russia context, that's very dangerous. I think the Russian government probably recognizes the fact that most of the inhabitants of Russia depend on having at least a small patch of land to feed themselves and that if privatization actually came about that a lot of the area would be bought up. There is also I think property rights in the context -- correct me if I'm wrong, but property rights in the context where you are working are more of community property rights. Is that correct? So, that's I think in my mind very different from privatization and I believe and you would speak probably better to this, Ilan was referring more to privatization and property rights for --

MS. FERRIS: Yes, I think so. All of these papers are now available in their entirety online, but they were particularly interested in the way in which natural resource development was taking traditional land used for reindeer foraging out of circulation, if you will, and the limits that causes and the challenges that poses to

indigenous livelihoods. Had very much to do with a nomadic nature, which has traditionally been an adaptation strategy for peoples in the Arctic for a long time.

On the question of the methane gas, just in the past few weeks, there have been a bunch of articles that have been released talking about the feedback loop of warming temperatures in the Arctic not only in the melting of permafrost, releasing methane into the atmosphere, but also as the ice is replaced with darker water, it doesn't reflect the sunlight, it increases the global warming. I think we're beginning to be aware how complex these relationships are and it seems like the predictions that held 10 years ago are already being out of date.

Other questions? Yes, please. We'll take those two in the back there.

SPEAKER: Thank you. My name is Margarite and I'm with the Environmental and Energy Study Institute.

And, so, it seems like we spoke a lot about the efforts that the Alaskan government or lack of efforts that the Alaskan government is putting into helping these indigenous peoples relocate and I was wondering if we could speak a little bit more about the other countries' efforts such as Norway and Russia, the circumpolar eight, as you mentioned, and are there any efforts those governments are putting in? And, if not, is there anything they can learn from the efforts that the native peoples are putting into creating this relocation framework?

MS. FERRIS: Thank you.

In the back.

MS. McCORMICK: Hi, my name is Sabrina McCormick. I am at George Washington University.

And I'm wondering if you can speak to the relationship between offshore oil development in Alaska, which is now happening a bit more full force if I understand

correctly and the Native Alaskans who are concerned about climate change. Is there a debate going on there between them about more oil in that area and the impacts on their livelihood? I know there's debate about the impact on their livelihoods today, but I'm wondering if there is more discussion about the impact of that oil development on long-term impacts in that area.

MS. FERRIS: Okay, and right up here. Ma'am? Yes.

MS. GANT: Mary Gant with the National Institute of Environmental Health Sciences at NIH.

I really don't understand in Alaska why there hasn't been a strong move for a legislative fix both in the state legislature and in the Congress. Over time, Alaska has had some very powerful members in the Congress who have worked hard to improve life of the indigenous people.

MS. FERRIS: Okay, here. One final question. Okay, yes, here.

MS. FITCH: This is for Dr. Bronen. The Obama Administration has been trying to establish these regional planning bodies for coastal and marine spatial planning in Alaska, notably as a state that is choosing not to really participate in that and I was wondering if you could offer some thoughts or insights on that. And from two perspectives, one, the academics perspective and also the indigenous peoples perspective.

Yes, I'm Robin Fitch and I'm with the Department of Navy.

MS. FERRIS: Okay. Why don't we start with you, Robin? There are a couple of questions that I'll ask and then maybe look at what the Russian government is doing to respond to some of these and any final thoughts you'd like to share.

DR. BRONEN: Sure. So, in regard to the offshore oil development, in the communities that I mentioned, Kivalina, Shishmaref, and Newtok, they're not really

being impacted by that offshore development which is much further north. And, so, I haven't really been participating in any of the conversations that have been happening at the local community level. It is quite controversial, as you might imagine, and especially it sounds like with all the problems that have been happening this past summer with Shell trying to do drilling there, it's questionable whether or not those efforts would go forward.

In regard to relocation legislation, I guess it's really important to understand how extraordinarily difficult relocation is from a human perspective and the legacy of relocations in the United States particularly of indigenous people have most often been forced and in Alaska, the most recent relocation effort occurred during World War II, when the indigenous people were relocated from one of the Aleutian Islands to southeast Alaska with horrific consequences for the tribe. And, so, it's a really touchy issue. Everybody recognizes that something needs to be done, and the reason why I'm so -- I'm a human rights attorney, and, so, why I passionately believe this has to be based on human rights doctrine, because if we don't base it in human rights doctrine, then governments will be making the decisions at grave consequences to people. And, so, we can't have a relocation institutional framework that doesn't acknowledge people's human rights.

And in regard to the last question, again, it's not conversations that I've participated in. The state in which I live has a very challenging relationship with the federal government and particularly on coastal relations, and, so, there was an initiative this past year where the local communities were trying to get control again over their local coastlines, and, unfortunately, that failed.

MS. FERRIS: I might just comment on the offshore oil question from the perspective of the paper written on the Scandinavian Arctic. Well, they show that the relationship is actually quite complex, that more offshore oil drilling means more

temporary workers moving into the region, but it also means more money in circulation which could improve alternative livelihoods or more tourism, that it's really kind of a mixed bag is what the researchers found in this situation in Norway. The paper also on the Scandinavian Arctic talks a great deal about the efforts of the governments in the region to respond to concerns both of indigenous peoples and climate change and their relationship with Saami councils, for example, and the way that policies on such things as reindeer and predation and so forth have really had a major impact on those communities. But let's hear a little bit about Russia.

MS. CRATE: Well, the Russian government doesn't have any -- the question was about infrastructure for relocation. The Russian government doesn't have infrastructure for relocation as I guess our country doesn't either yet. So, it's not a huge surprise. But as I wrote in my paper, on the republic level, there's been the response to relocate these communities that are in the path of the most danger. So, there have been these catastrophic floods in the last decade, mostly associated with the spring thaw of the Lena River and the other major rivers, which there are many in the Sakha Republic.

So, the response has been based on the case of Kalakh, not very successfully relocate these communities. So, the lessons drawn from that hopefully can inform the future response. But the emergency service who has developed this early warning system is really the main -- there is no climate change catastrophe response team in the Sakha Republic. It's all taken care of by the emergency response.

DR. BRONEN: And, yet, the relationship between the intensifying nature of these sudden onset disasters, whether flooding or storms is I think directly related to climate change, and, therefore, efforts are needed to address it.

MS. FERRIS: Oh, definitely. Yes.

But please join me in thanking our participants and thanks for all of you for coming. (Applause)

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