

ENVISIONING A CLIMATE CHANGE-PROOF FUTURE

Sustainable mobility, a global priority to combat climate crisis

Changes in temperatures and precipitations throughout the year limit people's mobility in Kamchatka, making it difficult to travel and access natural resources. People in Khailino rely on transportation infrastructure to pursue economic opportunities, maintain social relationships, and sustain traditional livelihoods.

Adapting to the new Arctic

People in Khailino report significant changes in river ice formation and break-up, as well as increases in "rain-on-snow" events. These forms of climate change have been observed in other Arctic regions and anticipate a transformative shift in polar regions.

Contextual understanding for grasping climate change impacts

Observations and impacts of climate change in Khailino interact with ongoing forms of cultural, economic, and political change. People's explanations of the impacts on their ways of life establish clear connections with human systems, which in Khailino cannot be understood fully without considering legacies from the Soviet era.

CLIMATE CHANGE IMPACTS EVERYONE AND EVERYTHING

Recognizing the intricate links between climate and social change is essential to document and act on current and future climate shifts. Policy makers and researchers should collaborate with Indigenous communities to create monitoring networks that combine multiple forms of knowledge to implement effective and sustainable mitigation and adaptation measures.

AUTONOMY VS SUPPORT: STRIKING A BALANCE

The harsh, remote conditions of Kamchatka have historically demanded a delicate balance between local autonomy and governmental support for the well-being of both the residents and the natural environment. This region is home to communities extremely vulnerable to climate change and new policies should prioritize empowering the local population while ensuring resources and infrastructure to address unforeseen challenges.

LEARN MORE



LICCI is a European Research Council (ERC) funded project aiming to bring Indigenous and local knowledge to climate change research. Visit the project website for more details and research results.
www.licci.eu

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Credit: Drew Gerkey

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Local Indicators of
Climate Change Impacts



Koryaks, Khailino Village Kamchatka Peninsula, Russia



Khailino village is an Indigenous community of Koryak, Chukchi, and Even people, located in Northeast Siberia. Khailino is experiencing unprecedented challenges arising from the amount and timing of snow and ice formation. The strong connections created between Indigenous culture and environmental conditions, provide the foundations for adaptation of traditional livelihoods.

Credit: Drew Gerkey

THE KORYAK, CHUKCHI, AND EVEN PEOPLES

Khailino, with a population of over 600, emerged in the Soviet era on Indigenous ancestral lands. The integration of traditional livelihoods during collectivization brought significant changes. In the post-Soviet era, they face challenges in adapting to market economies.



ACTIVITIES



Herding: Collective enterprises manage reindeer herds that pasture around the village.



Fishing: Spawning salmon provides food and income that help sustain families.



Mixed economies: Cash from wage labor and markets help sustain traditional livelihoods.

TERRITORY AND CLIMATE

Subartic. Tundra and Taiga

CLIMATE

Min: -28,1 °C avg. winter
Max: 22,3 °C avg. summer

Avg. speed: f 7-10 m/s

Long, cold winters with heavy snow
Short warm/cool summers with rain.

Changes in the climate

Increasing temperatures reduce snow quality and alter the freeze-up and break-up of river ice.

Intensive wind regimes are characteristic of the territory.

Snow is now unpredictable and there's more rain in winter.

ACCESS TO NATURAL RESOURCES

Local watersheds support salmon and freshwater fish.

Frozen rivers and snow cover allow transportation to access other resources.

Expansive tundra provides pasture for reindeer herds.

Changes in the territory

Seasonal transitions that hinder transportation are now highly variable and lead to periods of shortages.

The post-Soviet era has largely impacted the infrastructure and economy of the region: fewer and lower paying jobs, and reduced helicopter flights.

VOICES OF LOCAL KNOWLEDGE

People in Khailino have extensive individual experience and collective knowledge about the connections between social and environmental systems in Kamchatka. They are adept observers of climate change and its impacts. Their insights demonstrate how changing climates intersect with and exacerbate ongoing processes of social change.



Credit: Drew Gerkey

"I don't even remember in the past when we had rain in winter. Elders say it was very rare, and now we have rain every year. Two years ago, we had rain every month, even in winter!"

"You can see now [November] that we can't even walk on the river to go fishing. Ice used to stay strong up to April, even in May if you are careful. April was Winter!"

"[Reindeer] lose a lot of mass and become weak. When the mother is weak, she gives birth to weak calves, and many of them die. When we have a good winter with snow, the reindeer do better and sometimes give birth to twins."

"Parts of our traditional life are being lost, but we can still hold on, preserve it all. We try to pass it on of course."



Credit: Drew Gerkey

Climate change

Social change

Mobility

Drivers of change



Credit: Drew Gerkey

"I've seen big changes in temperature. For example, back in the 1990s, we had a really early frost and by November, we already had a winter road for transporting people and goods [to and from the village]."

"In 2014, during our trip to the reindeer herds for the Fall corral [November], the river melted and we were stranded for practically an entire month."



Credit: Victoria Sharakhmatova

IMPACTS ON LIVELIHOODS AND CULTURE



Credit: Drew Gerkey

When driving on ice is the safe option

Unpredictable weather disrupts ground travel during longer seasonal transitions. With no roads, melting snow and water floods immobilize vehicles, hampering food and resource transport and putting a stop to fishing and hunting.



Credit: Drew Gerkey

Rain on snow, or surviving despite nature

Changes in winter increase "rain-on-snow" events, making it difficult for reindeer to reach food beneath the snow and requiring herders to migrate in search of better pasture.



Credit: Drew Gerkey

When it rains, it pours

The new, erratic environmental conditions exacerbate existing challenges following Post-Soviet social changes in transportation infrastructure –including reduced helicopter transportation– and traditional subsistence linked to legacies of colonization.