Transformative Economics for a Sustainable Alaska

Emergent issues and solutions to address climate change through Indigenous perspectives while centering Alaska Native peoples and communities

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1. Executive Summary

Climate change in Alaska is set to cause over $5 billion of damage to infrastructure over the next 50 years, a figure which does not include the immeasurable negative impacts to human and environmental health that these changes will cause.[1] Neither the state of Alaska nor its inhabitants have the time or financial resources to delay responding to environmental threats. The consequences of inaction are already manifest in our at-risk coastal communities, where a lack of support for protect-in-place efforts or relocation programs has resulted in a reactive approach and left Alaskans responding to disasters at a high cost and to the severe detriment of communities. This paper examines the emerging issues and solutions to address climate change through Indigenous perspectives while centering Alaska Native peoples and communities. We will propose models that aim to foster more opportunities and support Indigenous-led mitigation and adaptation strategies.

2. Background

Indigenous Peoples account for less than 5 percent of the world's total population[2] while protecting more than 80 percent of the remaining global biodiversity[3] , managing 35 percent of intact forests[4] , stewarding 25 percent of above-ground carbon in tropical forests,[5] and caring for more than a quarter of Earth's surface.[6]

Indigenous Peoples have a fundamental relationship with the natural world and acutely feel the impacts of deforestation, loss of biodiversity, loss of sea ice, thawing permafrost, increased flooding, more frequent forest fires, and other impacts of climate change. In Alaska, Indigenous Peoples retain a direct connection with the land, including the past and present stewardship of Alaska's lands and waters. Indigenous knowledge[7] refers to the know-how and learnings of Indigenous Peoples developed and handed down across generations. This knowledge operates at a finer spatial and temporal scale than western science and includes understandings of how to cope with and adapt to environmental variability and trends.[8] A social-ecological systems approach is required to better facilitate resilience-building, a key component of global sustainable development.[9]

Alaska is homeland and traditional territory for over 200 federally recognized Tribes and is home to the largest proportional population of Indigenous Peoples of any state in the United States. The Indigenous communities of Alaska have relied on the land for generations and have an intimate knowledge of the natural cycles of plants, animals, and weather. Alaska Native culture, economy, and traditional ways of life are intimately tied to living off the land, gathering, hunting, and fishing for food; every year, tens of thousands of Alaska Natives harvest, process, distribute, and consume millions of pounds of wild animals, fish, and plants.[10] This way of life has been labeled 'subsistence' in the legal and political spheres.[11] Alaska Native subsistence represents a way of being in and relating to the world, thus comprising an essential component of Alaska Native identities and culture.

Research shows that Indigenous-managed lands have less species decline, less pollution, and maintain a high level of natural resources and resource management.[12] Research also demonstrates that ecosystems and biodiversity are fundamental to the very existence of Indigenous societies; measuring these values in purely economic terms, therefore, has significant limitations. Unlike the traditional western worldview that humanity can and should seek dominion over the natural environment, Indigenous populations tend to view humanity as part of an interconnected whole.[13] Both the Indigenous connection to the land and this interconnected worldview are a strength and asset for identifying climate solutions and leading adaptation to climate impacts. Abundant funding

and support from existing, evolving, and emerging governance structures are necessary to uplift Indigenous leadership for the benefit of local to global communities.

Indigenous Peoples and communities are particularly susceptible to climate change due to ongoing historical inequalities (e.g., social roles, state and federal policies, status); dependence on resources that are set to experience intense shifts (e.g., sea ice, permafrost, water, subsistence access); poor access to economic and social resources (e.g., financing, new technology, bargaining power, assets, social capital, and information) in both urban and rural areas; and insufficient representation in decision-making processes on climate change mitigation and adaptation (e.g., academic, local, state, national and international).[14] Climate change is a threat multiplier, and with increasing warming, physical systems or ecosystems may be at risk of abrupt and irreversible changes, magnifying vulnerabilities for Indigenous Peoples.

The COVID-19 global pandemic has compounded and intensified these vulnerabilities.[15] Over the past few decades, we have seen repeated global economic crises that have doled out trillions in relief dollars. However, during previous economic crises, countries have tended to enact stimulus packages that include investments in "shovel-ready" infrastructure projects, such as building fossil fuel power plants and investing in heavy industries, that are extractive and ultimately exacerbate climate change.[16] Following that old playbook to respond to the COVID-19 pandemic would be a terrible mistake, as it would amplify the air pollution, health, and climate crisis.[17] Allocated more effectively, relief and recovery dollars could help thwart the impending threats of climate impacts in Alaska, especially in Indigenous communities, e.g. Kivalina and Shishmaref, which are under the gravest threat from rising sea levels and increased storm erosion. These climate related threats endanger entire Arctic Indigenous communities.

We need to focus on alternative and sustainable pathways to economic stability that steady our climate while increasing resilience within Alaska's Indigenous communities. A reliance on extractive industries causes a disconnect from and erosion of traditional values. Moreover, the current trajectory of the oil and gas sector indicates that the extractive based economy in Alaska will shrink, [18] intensifying the need for more diverse streams of income. Responding to these shifts and rebuilding our infrastructure to be more climate resilient and to better incorporate clean energy and technology solutions will require significant resources, planning, and workforce capacity.[19]

The current system or "business-as-usual" does not serve Alaska Native people well. It forces a reliance on programs that provide few opportunities to break the poverty cycle or the ability to foster a way of addressing climate change threats. On average, Alaska Native peoples experience low levels of social mobility and the inequality gap continues to widen while Alaska Native people continue to fall further behind.[20] As such, Alaska Native and Native American Peoples experience lower health, social, and education outcomes than non-Native Americans across the board. These disparities are exacerbated by the lack of available financial resources and accessible services for Indigenous Peoples.[21]

Where policies are being elaborated on issues that affect Indigenous Peoples and their long-standing relationship with their lands and resources, they have a right to participate in such processes. Indigenous Peoples also need to be consulted and to share in any benefits deriving from the use of their knowledge and resources in line with relevant domestic and international standards. Engaging with Indigenous Peoples to leverage their knowledge, while respecting their worldview and ensuring the sustainability of their way of life, must remain central to responses to climate change.[22] For example, Indigenous values are more in line with a "regenerative economy" model, which is based on ecological restoration, community protection, equitable partnerships, justice, and full and fair participatory processes rather than an extractive economy or a "growth economics" model, which is a system of exploitation that values consumerism, colonialism, and money over people, cultures and the planet.[23] Policymakers should therefore seek more appropriate methods of evaluating climate and economic impacts beyond the current growth economics framework.[24]

3. Case Evaluation

3.1. Lack of Philanthropic Funds

There is a staggering lack of investments and philanthropic funds accessible to or designated for Indigenous Peoples.[25] For example, of all philanthropic funding by U.S. foundations, less than 0.04% is directed to Native American Peoples and groups. Even fewer philanthropic dollars went to Alaska Natives, and of that, just .02% went to Native women. This lack of access to resources dramatically hinders the individual, household, and community's ability to adapt and address climate change, have social mobility, and even access education.

3.2. Gender Inequality

There is a notable gender inequality and lack of access to funding for Indigenous women, who are typically paid only .58 cents for every dollar paid to a white male amounting to a loss of $24,443 each year. This means that if a white male and an Indigenous woman held the same job with the same education, the Indigenous women must work more than 21 months to make as much as a white male does in 12 months, leading to a lifetime loss of $977,720.[26]

3.3. Alaska Energy Costs

Alaska has prohibitively expensive energy costs. About 15% of all Alaskans live in over 200 small, remote communities dispersed across more than 500,000 square miles and accessible only by air or water transportation. These rural communities have the highest cost of living of anywhere in the United States. Rural Alaskan households spend 27% of their annual income on home energy, significantly more than the average of 7% in urban Alaska.[27] In comparison, households across the contiguous United States spend between 2-3% of their annual income on electricity.[28]

Despite the recent global lowering of gas and oil prices, these costs in rural Alaska remain high. Alaska is ideally suited to develop alternative energy resources, with many communities situated in remote areas isolated from a larger energy grid and with consistently high energy costs. Developing a climate-focused and sustainable energy infrastructure would provide the opportunity to address many challenges Alaskans face, from creating economic opportunity to reducing basic energy costs as we lead the way for future and new infrastructure in Alaska communities.

3.4. Lack of Investments in Climate Impacts and Actions in Alaska

There is a notable lack of diverse investing in Alaskan climate impacts and actions, while on a global level, investments in green transportation, sustainable agriculture, and climate-resilient infrastructure have proven to have a multiplier effect; according to the Business Commission for Sustainable Development, investing $320 billion annually in sustainable business models in developed economies could unlock $2.3 trillion in additional annual investment by 2030.[29] In addition, the International Finance Corporation has identified nearly $23 trillion in climate-smart investments in emerging markets through 2030. Developing countries are expected to account for roughly two-thirds of this new infrastructure investment, which can be made sustainable and compatible with climate goals through only modest additional upfront costs. Ultimately, these upfront costs can be more than offset by efficiency gains, fuel savings, and increased quality of life.[30]

In Alaska, there is both an opportunity and a need to invest in climate-smart investments that can yield returns while simultaneously developing climate resiliency. A mounting body of evidence demonstrates that pursuing low-carbon and climate-resilient growth is the best way to unlock lasting economic and social benefits. Climate investing could deliver at least $26 trillion in net global economic benefits between now and 2030, compared with business-as-usual.[31] For example, companies committed to 100% renewable power have better net profit margins and earnings than those without this commitment. And corporations that are actively managing and planning for climate change will secure an 18% higher return on investment than companies that are not[32] — and 67% higher than companies that refuse to disclose their GHG emissions.[33] Equitable and diverse investments in climate action in Alaska are likely to result in economic advantages for Alaska communities and businesses rather than the current situation of Indigenous communities enduring insufficient and inequitable funding and high energy costs.

4. Opportunities

4.1. New Revenue - Carbon Markets

Carbon markets are an example of an opportunity to mitigate climate change and contribute to economic stability. However, carbon markets should be designed as a temporary mechanism with a fixed timeline based on the understanding that carbon offsets are not a long-term solution to addressing Alaska's climate crisis. This model draws from the experience of the Yurok Tribe and 13 other tribes and Alaska Native corporations from across the U.S., which now participate in California's cap-and-trade program. As of September 2020, 78.9 million carbon offset credits were issued to tribes or Alaska Native Corporations for forest projects through California's program. Participation in this program has helped to strengthen tribal members' relationship to their traditional territory, reinforce tribal land management, and invest in social and cultural projects such as the restoration of salmon habitat and the creation of farms to increase food sovereignty.

Carbon markets exist under both mandatory schemes and as voluntary programs. This example of revenue creates a profound opportunity for Alaska, from the immediate benefit of addressing climate change to the important role that voluntary markets provide in what is known as "co-benefits". A growing number of governments and companies are addressing climate risk by putting a price on carbon and are seeing reduced emissions, strong economic performance, and healthier development. Linking already well-functioning carbon markets, either through bilateral recognition of allowances under "cap and trade" systems or through a linked set of policy instruments, in combination with policy, is an effective way to reduce global emissions.[34]

Different types of carbon pricing have historically been used to finance renewable energy development because the technology was more expensive than traditional energy sources and therefore could not be implemented without relevant finance

mechanisms.[35] This, however, is changing as renewable energy becomes more affordable. Consequently, carbon finance is only needed to implement certain types of projects in some areas and, as a result, carbon standards are phasing out their recognition of offsets generated through the provision of renewable energy.[36]

In an illustrative scenario of an untouched swath of trees in Alaska, the area can be seen to generate multiple large benefits under the forest-based carbon offset model, including carbon sequestered in the living trees themselves and the generation of significant income from "selling" the sequestered carbon in the form of carbon offset credits to an entity operating in a cap-and-trade system or other carbon footprint reduction effort (typically a for-profit entity). In addition, applying the forest-based carbon offset model to this area would safeguard a portion of Alaska's "irrecoverable carbon"—a type of carbon vulnerable to release upon land use conversion and not recoverable on timescales meaningful to avoiding dangerous climate impacts.[37]

Only a small swath of Southcentral and Southeast Alaska is currently eligible for carbon offsets in the California regulated cap and trade market. To date, several Alaska Native Corporations located in the eligible area have taken advantage of this opportunity and developed carbon offset projects on large portions of their ANCSA lands[38]. Other than the California regulated market, no other regulated carbon offset markets domestically or globally currently recognize carbon offset credits originating in the state of Alaska, severely limiting the opportunity for Alaska and Alaska Native peoples to benefit from forest-based carbon offset project development.

However, as recognition of the dire trajectory of a warming climate accelerates, the demand for carbon offsets as a tool to reduce a company's carbon footprint also increases. The dearth of quality carbon offset credits poses a significant opportunity for Alaska, especially Alaska Native Corporations outside of the areas eligible to sell carbon credits in the California regulated market. As a result, a volunteer "unregulated" carbon offset market is on the brink of emerging. Such a market would develop carbon offset credits for buyers that are not required, but voluntarily wish, to purchase them. Voluntary carbon credit development projects may also offer other benefits in addition to lowering GHG emissions, such as poverty reduction, habitat preservation, increases to local living standards, and bringing capital into Alaska that can help Alaska Native communities address climate impacts.[39]

Under a voluntary carbon offset market, the value created in the development and sale process can be directed as investment into Alaska Native communities to strengthen climate resilience, adaptation, and mitigation efforts. Across rural Alaska, there are many climate and other relevant projects that have been designed, assessed, deemed technically feasible, and are ready for execution and implementation. With financial sponsorship or support from the value created from a voluntary carbon offset market, these projects can move forward, and rural and Indigenous communities can further address their existing high fuel costs by replacing diesel-fuel generators with renewable energy, putting into place appropriate adaptation and resilience measures, and reducing carbon emissions. Already, for-profit companies have begun to aggressively pursue opportunities to

capture value for their shareholders through the Alaska voluntary carbon offset market. However, non-Alaskan for-profit companies are unlikely to reinvest their revenues into Alaska nor Indigenous resilience models.[40] This creates the potential for the continued exploitation of Indigenous communities under the guise of climate solutions. A voluntary carbon offset program designed and led by Alaska's Indigenous communities could ensure revenue is reinvested in Indigenous-driven programs that target climate change adaptation and mitigation solutions.

As a readily available and short-term solution, a carbon market can jumpstart a funding stream to support needed climate change solutions in rural Alaska. The example below illustrates how forest-based carbon offsets will have a variety of co-benefits that multi-solve several different issues. These solutions are rooted in just means and reduce fossil fuel emissions while also offering benefits such as resilience and other forms of wellbeing.[41] The benefits of this type of voluntary carbon offset credit market are numerous. This carbon offsetting approach offers social capital and co-benefits by preserving land for hunting, fishing, and use by Alaska Natives that boosts economic and food security as well as creating jobs, educational opportunities, public health benefits, social empowerment, and maintaining a bottom line of a fiscal return. Most importantly, it positions Alaska Native communities to thrive in the face of climate change while also helping to reduce carbon pollution. The typical 40-year time frame for most voluntary carbon offset projects would also ensure that much forested land in the state of Alaska would be protected from damaging extractive industry projects.[42]

4.2. Climate Resilience Fund

Stable and reliable funding is critical for community planning and adaptation. One way to support community-driven climate solutions is through the establishment of a Climate Resilience Fund (Fund). Such an entity can be funded through a multi-partner collaboration including earnings from the voluntary carbon offset market-based program (mentioned above), nonprofit support, and impact investments.

In the case of the voluntary carbon market model, the payments received from the carbon offsets are a potential avenue for distributional equity, with profits distributed to the Fund and beneficiaries that could serve as an economic stimulus for villages, Tribes, individuals, and groups; many of which are often ignored or inconsistently supported by most philanthropic, state, and federal agencies. The forest sequestration model is just one example, there are several potential mechanisms to capitalize the Fund, ranging from venture capital and social impact investing to other types of carbon offset programs, green banks, and carbon pricing at the national or international level.

While there are some risks associated with this model, by and large, the assets that contribute to the Fund will grow in a tax-advantaged environment and, over the years, the value of the corpus will likely far surpass the level of initial funding– even though the Fund would be making regular charitable grants and no-to-low interest loans. The result will be a significant movement of capital to help with

climate mitigation and adaptation in Alaska as well as the benefit of passing an even larger funding source to future generations in perpetuity.

A fund that is designed by and for Indigenous Peoples is necessary because Alaska Native communities and groups often face a general lack of understanding about Indigenous culture, practices, and lifeways within philanthropic foundations and environmental nonprofits, and are limited by the capacity of Tribal governments to effectively seek and secure funding.[43] The gap between investments in Alaska-based climate adaptation and the need is far too great not to take immediate action. A Climate Resilience Fund can guarantee a greater level of confidence in revenue and more autonomy to Indigenous Peoples to address climate change in ways that work for them, while demonstrating focused outcomes and advantages of climate action at the local and regional level.

4.3. Examples of community-based Climate Solutions

Below are three examples of community-based programs that address climate change through Indigenous perspectives while centering Alaska Native peoples and communities. These programs could be supported by revenue generated either directly or indirectly from the models mentioned above.

4.3.1. Indigenous Climate and Business Incubator Program

Public funding programs for Indigenous entrepreneurs can deliver multiple levels of benefits, providing incentives, funding innovation, and even supporting the development of local climate resiliency plans (addressing housing, food security, economic security). Public funds also catalyze private investments in these objectives and overall climate resilience.[44]

It is well established that entrepreneurship is a path to stronger and more resilient Indigenous communities. This, coupled with a focus on climate change-related programs, will help ensure that Indigenous Peoples decide their own future and write their own narrative of how to address climate change. Notwithstanding Tribal sovereignty, Alaska Native peoples remain dependent on services and entities outside of Alaska to address climate change-related issues; these entities often restrict or shape funding, jobs, training, and governance in ways that inappropriately influence or dictate the future and economies of Alaska Native communities. Directing support instead to Indigenous small businesses will foster economic self-sustainability and create more opportunities to respond to long-term challenges such as climate change. An Indigenous Climate and Business Incubator program will help usher the next era of economic development and set up Indigenous-led businesses as drivers of healthy, culturally cognizant economies and peoples.

4.3.2. Indigenous-led Land and Resources Guardians

Indigenous-led Guardians programs empower communities to manage ancestral lands according to traditional laws and values and bring much-needed economic

development opportunities. Guardians are employed as the "eyes on the ground" in areas of land and water managed by Indigenous groups as protected areas for biodiversity conservation. These programs are established through agreements with and among the appropriate government entities (e.g., Tribal, local, state, or federal). Guardians monitor ecological health, maintain cultural sites, and protect sensitive areas and species; they play a vital role in creating land-use and marine-use plans; and, they promote intergenerational sharing of Indigenous knowledge that helps to train the next generation to caretake the land.[45]

In Southeast Alaska, there is a recent agreement with the U.S. Forest Service and the Central Council of Tlingit & Haida Indian Tribes of Alaska that recognizes the critical role and inherent sovereignty of tribes in all aspects of stewardship of their homelands and waters. This program will ensure the integration of shared stewardship to bring new capacity to watershed restoration efforts; adaptation planning to ensure integration of diverse knowledge into vulnerability assessments and adaptation efforts; aid in monitoring and protecting heritage sites and resources; and information and knowledge sharing on subsistence issues.[46] In Canada, the federal government recently recognized the Edéhzhíe Protected Area and lent support to an Indigenous Guardianship Program in which Indigenous communities manage their own territories according to traditional laws. This is a recent step towards governmental acknowledgment of Indigenous-led and highly effective stewardships of land management.[47]

Research shows that Indigenous-led land management programs generate three dollars in conservation, health, and economic results for every dollar invested. A steady income to Native Peoples through a land management program would improve lives and could help move Alaska away from systems that perpetuate poverty. It could also help to correct the marginalization of Indigenous Peoples by providing economic stability along with the inherent benefits of traditional land management processes. Studies where steady income was applied to Native American sample groups indicate that changes in the stable income of a household can have permanent and positive effects for children within these households long into adulthood. In general, there is an overall improvement in the outcomes of Native American children, while those of the non-American Indian children have remained mostly unchanged.[48]

While Guardian programs should not replace the funding of other important programs, they will bolster the continued flow of funding to Alaska Native communities so they can sustain the necessary programs and support to their members. By providing steady income grounded in traditional values and delivering funding directly to communities this program would raise families out of poverty, leading to better community, health, and education outcomes coupled with better environmental management and climate mitigation.[49] Indigenous Peoples that are alleviated from the most oppressive impacts of social inequality have the space and opportunity to do what Indigenous Peoples have always done, care for and manage lands.

4.3.3. Database and Information Program

In order to fully understand the economic future of Alaska, we need more information on Alaska, climate change and the economic outlook, including

visibility on the threats, opportunities and impacts of a changing environment and the shift away from an extractive economy.

We need to build a database of adaptation measures that clusters information by area, ecosystem, sector, adaptation challenge, and type of investment, among other data points that will give an overview of the status of climate change in Alaska and inform a view of Alaska's economic future. Below are a few examples of models and tools that would contribute to a model for future forecasting as well as increase understanding of the problems at hand.

4.3.3.1. WICKED ISSUE MAPPING: This is an issue-based approach to clarifying "wicked problems" or complex, multifaceted problems that involve multiple stakeholders and have no singular solution.[50] Climate change, just transition, and transformative economies are examples of wicked problems. Alaska sits at the nexus of many of these challenges and would benefit from this type of analysis.

4.3.3.2. FRAMEWORK ASSESSMENT: Arctic environmental change can cause socio-economic impacts both at the regional and global levels. A framework is needed for an integrated Indigenous management system that accounts for complex interactions within a society dealing with rapid change and substantial uncertainties. A comprehensive framework for assessing the total economic effect of the changing Arctic could help guide both investment and a wider climate policy.[51]

4.3.3.3. NEW TOOLS AND DATABASES: Increasing sophistication of spatial analytical tools, such as the Global Platform of Indigenous and Community Lands or LandMark,[52] the Protected Planet database,[53] and the Indigenous and Community Conserved Areas Registry,[54] has enabled better documentation of the extent, as well as biodiversity and carbon storage values, of Indigenous lands.[55] Developing such tools and databases specifically for Alaska will improve our understanding of our lands and waters and the present and potential impacts of changing climate.

5. Recommendations

We make two main recommendations to address climate change through Indigenous perspectives and to foster more opportunities for Indigenous-led mitigation and adaptation strategies. The first recommendation (5.1) is the development of an Indigenous-led model that will ensure that Alaska Native peoples benefit fully and strongly from carbon markets. The second recommendation (5.2) is creation of a Climate Resilience Fund, paid for in part by the revenue generated from carbon markets.

5.1. Carbon Markets & Pricing

Currently, there are no Indigenous-led or Alaska Native-led carbon markets services in Alaska, only entities from outside Alaska coming in to offer these types of carbon markets services. Under this recommendation, Alaska and Alaska Natives will develop carbon finance programs, generating substantial revenue to be reinvested into social, economic development, natural resource, and cultural programs. Forest sequestration is a mechanism that pays a landowner to maintain a forest and to keep it from being logged. Trees take in carbon dioxide as they grow, helping make up for greenhouse gas emissions. Alaska Native Corporations (ANCs) who have participated in carbon markets have agreed to maintain the forests they manage for at least 100 years. The past deals through BP, made in collaboration with Sealaska and Ahtna, accounted for the largest carbon credit event in North America, and is verified through California's cap-and-trade program. More ANCs are considering joining to provide revenue and land protection guarantee.

To date, the majority of Alaska's lands and all of Hawaii's lands have been excluded from developing forest-based carbon offsets for the regulated California and Quebec carbon markets (the largest mandatory carbon markets in North America). There is significant potential to protect large portions of Alaska's and Hawaii's lands and resources, and to increase renewable energy and energy efficiency deployment by establishing a voluntary carbon offset marketplace that brings together large industry in Alaska and Hawaii with major landholders, especially ANCs and Native Hawaiian landholders, and others interested in transitioning to renewable energy or lower carbon fuel sources.

To date, Alaska's rural villages have struggled to deploy renewable energy and energy efficiency on a broad scale. Creating a carbon offset marketplace that initially focuses on forest-based carbon offset credits could help fund alternative energy and climate resilience across the state, in addition to dramatically boosting economic development. We recommend the design of an Indigenous-led,

managing entity that develops and sells carbon offsets to fund forest and wetland conservation across Alaska. This entity will develop innovative approaches for the preservation of natural systems that are critical to addressing climate change, improving the availability and quality of freshwater, protecting biodiversity, alleviating poverty, and funding climate mitigation.

5.2. Develop a Climate Resilience Fund

The Climate Resilience Fund will be capitalized through a multi-partner collaboration incorporating earnings from the carbon pricing market-based program, philanthropic and nonprofit support, and impact investments.

The Climate Resilience Fund could be guided by the following general objectives:

Local voices and global collaboration: Refocus on local community leadership for climate action while supporting cooperation with partners for climate action domestically and around the world.

Advocacy and education: Highlight shared experience and new knowledge of climate resilience, climate adaptation, and mitigation goals.

Human and ecosystem health: Develop a greater understanding of the science needed to best address environmental and ecosystem changes, and the impact on human health, cultures and wellbeing.

Economic and investment opportunity: Encourage climate-resilient private sector diversification, innovation, and equitable investment mechanisms.

6. Conclusion

Decades of colonialism and injurious policies and actions have harmed and still impact Native communities and have accelerated the loss of tribal cultural traditions, a process compounded by climate change, COVID-19, and economic downturns. The legacy of thriving Indigenous Peoples must be restored through greater investments and economic opportunities in Native peoples led by Native peoples.[56]

Even though Indigenous Alaskan communities have a track record of high adaptability to natural variability, the rate and magnitude of such changes represent unprecedented challenges to the current adaptive capacity and resilience of Alaskan residents. There is an urgent need to put socio-economic policies and practices in place that will help communities adapt to a rapidly changing environment across the state of Alaska. [57]

On the global level, the extent of Alaska-related effects is highly uncertain but could cause multiple losses associated with sea-level change, increased carbon release from thawing permafrost, warming temperatures because of the loss of the sea ice and snow cover, and growing extreme weather events due to increased polar jet stream volatility.[58] In addition, the limits to adaptation funds and/or political unwillingness to invest in mitigation could lead to political and economic tipping points both in Alaska and the Arctic region globally.[59]

Alaska has neither the time nor the financial resources to further delay responding to environmental changes that pose a direct threat to the physical and cultural survival of our Indigenous communities. Developing an economic driver such as the Climate Resilience Fund and providing capital to enter global markets will propel Alaska Indigenous Peoples into managing ecosystem shifts, equip them to adapt to climate change, and help them mitigate its impacts, while centering Indigenous cultural values and creating a thriving, sustainable economy in Alaska.

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