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CLIMATE CHANGE MITIGATION AND ADAPTATION: WITH OR AGAINST INDIGENOUS PEOPLES?

Abstract

Climate change and its negative consequences represent a common problem for all the people on Earth and are likely to become one of the most serious challenges that humankind faces. As such, mitigation measures and adaptation actions are of particular importance. Although often thought as the two sides of the same coin, the climate change mitigation and adaptation differ from each other, especially in the context of indigenous peoples. Therefore, the first part of the paper centres on the relation between climate change mitigation and adaptation and their consequences for indigenous communities. The newest international treaty on climate change, the Paris Agreement, establishes the global goal on adaptation, which should take into consideration vulnerable groups, communities and ecosystems, and more importantly, should be based on and guided by the best available science and knowledge of indigenous peoples, often referred to as ‘traditional knowledge’. As such, the second part of the paper focuses on the adaptation methods guided by the traditional knowledge. Although examples include indigenous peoples’ traditional knowledge from all over the globe, much attention is given to the Arctic Indigenous Peoples as, due to current speed of climate change, the Arctic is recognized as a global climate change hotspot. Although indigenous peoples have been living in their territories since the time immemorial, adapting their ways of life to the difficult weather and environmental conditions, with the current climate change happening so rapidly, their possibilities of adaptation are weakening and climate change renders them more vulnerable, altering their economic and cultural activities and threatening their very

existence. However, the current rate of climate change is not the only factor impairing the indigenous peoples' adaptive capacities. Therefore, the final part of the paper is aimed at presenting what the obstacles to the successful adaptation to climate change are and whether migration should be considered an adaptive action.

KEYWORDS

indigenous peoples, mitigation and adaptation to climate change, cultural aspect of climate change, the Arctic, traditional knowledge

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ludność tubylcza, łagodzenie i adaptacja do zmian klimatu, wymiar kulturowy zmian klimatycznych, Arktyka, wiedza tradycyjna

1. INTRODUCTION¹

Climate change is probably the most unprecedented global environmental challenge of our time. Its impact is felt across all sectors and sections of society. The expected and already observed effects of climate change include an increase in global average air and ocean temperatures, widespread melting of snow and ice, and the rising global average sea level, as well as varying changes in precipitation, storm frequency, and landscape coverage. There is no doubt that climate change is a global problem. As such, there is a strong need for international consensus and more importantly – cooperation. The international climate change law cornerstone, the United Nations Framework Convention on Climate Change (UNFCCC), was signed by 154 states at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. Since then, the international climate change regime has been gradually expanding to include several international agreements, including the most recent one – the Paris Agreement. Although, at first glance, international climate change law may seem very distant from the issue of indigenous peoples' rights, making this law effective requires various approaches and participation of different stakeholders. This insight has been noted by the drafters of the latest instrument from the international climate change regime, the Paris Agreement, which makes reference both to the concept of human rights and to indigenous peoples.

¹ The author wishes to acknowledge the fact that the research done for this paper received funding from the National Science Centre (NCN) under the agreement 2020/37/N/HS5/00595.

Indigenous peoples have been identified as particularly sensitive to climatic changes, due to a high dependence on the environment for their livelihoods. The United Nations body for assessing the science related to climate change, the Intergovernmental Panel on Climate Change (IPCC), has stressed that people who are socially, economically, culturally, politically, institutionally, or otherwise marginalized are especially vulnerable to climate change and also to some adaptation and mitigation responses.² As indigenous peoples continue to be marginalized, climate change will exacerbate many of existing barriers and in many cases will make their adaptive responses more difficult. Therefore, the first part of the paper centres on the relation between climate change mitigation and adaptation and their consequences for indigenous communities.

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Although indigenous peoples have been living in their territories since the time immemorial, adapting their ways of life to the difficult weather and environmental conditions, with the current climate change happening so rapidly, their possibilities of adaptation are weakening and climate change renders them more vulnerable, altering their economic and cultural activities and threatening their very existence. However, the current rate of climate change is not the only factor impairing the indigenous peoples’ adaptive capacities. Therefore, the final part of the paper is aimed at presenting what the obstacles to the successful adaptation to climate change are and whether migration should be considered an adaptive action.

2. ADAPTATION AND MITIGATION IN THE INTERNATIONAL CLIMATE CHANGE LAW

Climate change mitigation and adaptation are two core features of the system created by the UNFCCC and related instruments. Although very different, these two types of action are mutually indispensable for fighting climate change, yet they have distinct dimensions for indigenous peoples.

² Ch. B. Field, V. R. Barros, D. J. Dokken et al. (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge – New York 2014, p. 6.

Climate change mitigation involves human interventions that reduce greenhouse gas emissions from sources or enhance their removal from the atmosphere by carbon sinks (understood as elements that absorb CO₂, such as for example forests, vegetation, or soils).³ The examples of mitigation actions include: replacing greenhouse gas-emitting fossil fuels like coal, oil, and natural gas with clean, renewable energies like solar, wind, and geothermal; retrofitting old buildings to make them more energy efficient; planting trees and preserving forests so they can absorb and store more carbon dioxide from the atmosphere.⁴ To be successful, mitigation requires long-term planning, economic resources, and should be generally managed in a top-down manner.

Adaptation, on the other hand, is '[t]he process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.'⁵ Adaptation helps manage climate risk reducing it to an acceptable level, taking advantage of any positive opportunities that may arise. Adaptive actions are usually undertaken at a private, local and regional level, and require central managing to a lesser extent.

Adaptation could be understood as addressing the consequences of climate change, while the goal of mitigation is to address the cause of the problem. Adaptation options can be categorized into grey, green and soft measures. Grey measures refer to technological and engineering solutions to improve adaptation of territory, infrastructures and people. Green measures are based on the ecosystem-based (or nature-based) approach and make use of the multiple services provided by natural ecosystems to improve resilience and adaptation capacity. Soft options include policy, legal, social, management and financial measures that can alter human behaviour and styles of governance, contributing to improved adaptation capacity and to increased awareness on climate change issues.⁶

The UNFCCC refers to mitigation under Article 4(2)(a), stating that the developed country Parties and other Parties included in Annex I 'shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and

³ K. J. Mach, S. Planton, Ch. von Stechow (eds), *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R. K. Pachauri and L. A. Meyer (eds)], IPCC, Geneva 2014, p. 125.

⁴ D. Rojas, *Climate Adaptation vs. Mitigation: What's the Difference, and Why does it Matter?* The Climate Reality Project, 7 November 2019, <https://www.climate realityproject.org/blog/climate-adaptation-vs-mitigation-why-does-it-matter> (accessed 15.11.2022).

⁵ K. J. Mach, S. Planton, Ch. von Stechow, 2014, *op. cit.*, p. 117.

⁶ The European Climate Adaptation Platform Climate-ADAPT, *Adaptation Options*, <https://climate-adapt.eea.europa.eu/knowledge/adaptation-information/adaptation-measures> (accessed 15.11.2022).

enhancing its greenhouse gas sinks and reservoirs', and to adaptation in Article 4(4). While Article 4(2)(a) is quite detailed, Article 4(4) of the UNFCCC is limited only to financial assistance provided by the developed country Parties and other developed Parties included in Annex II to the 'developing country Parties that are particularly vulnerable to the adverse effects of climate change'.⁷ Therefore, it is quite clear that in 1992 far greater emphasis was placed on mitigation than on adaptation to climate change.

As it has been mentioned, the mitigation actions include replacing greenhouse gas-emitting fossil fuels like coal, oil, and natural gas with clean, renewable energies like solar. Although indigenous peoples contribute little to greenhouse gas emissions and their ways of life are considered sustainable, very often they bear the burden of mitigation undertakings. For instance, biofuel initiatives are a means of reducing greenhouse gas emissions but may lead to an increase in monoculture crops and plantations and an associated decline in biodiversity and food security.⁸

In September 2019, the UN Special Rapporteur on human rights and the environment, David Boyd, conducted an official visit to Norway and identified several pressing challenges with regard to Norway's obligation to respect, protect and fulfil the human rights of the Sámi people. In Finnmark County, he found that the development of, inter alia, wind farms and hydroelectric power plants resulted in the disappearance and fragmentation of pasture lands and posed a serious threat to the sustainability of the reindeer husbandry, which is the primary subsistence activity for the Sámi.⁹ The situation in Finnmark County is by no means an exception, as similar mitigation projects are being developed on indigenous lands all over the world. This, in turn, calls for environmental justice and creates a serious ethical dilemma, which requires careful analysis on the part of the authorities before any such project is developed. In any case, the minimum requirement should be prior consultation with an indigenous community concerned, which is compliant with Article 19 of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP): 'States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them.'¹⁰

⁷ United Nations Framework Convention on Climate Change, 9 May 1992, S. Treaty Doc No. 102-38, 1771 U.N.T.S. 107.

⁸ United Nations, Department of Economic and Social Affairs, *Climate Change*, <https://www.un.org/development/desa/indigenouspeoples/climate-change.html> (accessed 15.11.2022).

⁹ The International Work Group for Indigenous Affairs (IWGIA), *The Indigenous World 2020*, Copenhagen 2020, p. 529.

¹⁰ United Nations Declaration on the Rights of Indigenous Peoples, United Nations GA Resolution A/RES/61/295, adopted on 13 September 2007.

The Paris Agreement, on the other hand, gives a lot of attention to both of the concepts, and especially to the adaptation. The discourse of adaptation gradually appeared in the literature on climate change in the 1990s, and in 2001, the Intergovernmental Panel on Climate Change for the first time claimed that adaptation strategy was necessary ‘to complement climate mitigation efforts at all scales’.¹¹ A strong emphasis on adaptation in the Paris Agreement, an instrument adopted in 2015, may indicate a consensus that climate changes are inevitable, and only their extent and severity are at stake.

Article 7 of the Paris Agreement stipulates ‘the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal’.¹² In Article 7(5): ‘Parties acknowledge that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach’.¹³ This approach should take into consideration vulnerable groups, communities and ecosystems, and more importantly, it should be based on and guided by the best available science and traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate. However, as the latest studies indicate, indigenous peoples are rarely consulted and their views are not incorporated into the national policies,¹⁴ including the Nationally Determined Contributions, i.e. a governments obligation under the Paris Agreement.¹⁵ Therefore, the following section details what the traditional knowledge, or indigenous knowledge, is and how it could be beneficial for both indigenous and non-indigenous communities.

¹¹ See M. Fayazi, I.-A. Bisson, E. Nicholas, *Barriers to Climate Change Adaptation in Indigenous Communities: A Case Study on the Mohawk Community of Kanesatake, Canada*, ‘International Journal of Disaster Risk Reduction’ 2020, Vol. 49, p. 1.

¹² Paris Agreement adopted at the UN Climate Change Conference of the Parties to the United Nations Framework Convention on Climate Change, 12 December 2015, UN Treaty Series, Vol. 3156, Article 7(1).

¹³ *Ibid.*, Article 7(5).

¹⁴ See C. R. Bijoy et al., *Nationally Determined Contributions in Asia: Are Governments Recognizing the Rights, Roles and Contributions of Indigenous Peoples?* Asia Indigenous Peoples Pact (AIPP) Foundation, Chiang Mai 2022.

¹⁵ See M. Mills-Novoa, D. M. Liverman, *Nationally Determined Contributions: Material Climate Commitments and Discursive Positioning in the NDCs*, ‘WIREs Climate Change’ 2019, Vol. 10(5).

3. TRADITIONAL KNOWLEDGE AND INDIGENOUS VALUES

Although there is no uniform legal definition of indigenous peoples, and neither there should be one, the characteristic feature of the communities that define themselves as ‘indigenous’ is the central role of their culture and traditions, distinct from those of the mainstream or dominant society, and their relationship to the surrounding environment. According to W. Neil Adger, culture, defined as the symbols that express meaning, including beliefs, rituals, art and stories, creates collective outlooks and behaviours, and is a source from which strategies to respond to problems are devised and implemented.¹⁶ One of the elements of indigenous culture is called traditional knowledge, which makes reference to knowledge and know-how accumulated across generations that guide human societies in their innumerable interactions with their surrounding environment,¹⁷ and can be defined as ‘a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission.’¹⁸ As culture and traditional knowledge are central to indigenous peoples, they are also central to their adaptive capacities and will guide their adaptation methods.

There are myriad ways in which indigenous peoples express their adaptive capacity, using traditional knowledge. In Africa, a water harvesting technique originating from the Sahel and known as *zai* pits or *tassa* helps restore degraded drylands through climate-smart agriculture, while in Vanuatu, traditional architecture proved to be a key factor in disaster risk reduction, as the communal buildings used as evacuation centres during Cyclone Pam in 2015 were found much safer and stronger when built using local materials and building skills.¹⁹

An example of how integrating traditional knowledge can benefit the process of adaptation are the Low Impact Shipping Corridors, i.e. the adaptation strategy developed by the Canadian Government that supports safety and sustainability under rapidly changing environmental conditions.²⁰ The Low Impact Shipping Corridors in Canadian Arctic are voluntary maritime routes where services and

¹⁶ W. N. Adger et al., *Cultural Dimensions of Climate Change Impacts and Adaptation*, ‘Nature Climate Change’ 2013, Vol. 3(2), p. 112.

¹⁷ D. J. Nakashima et al., *Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation*, UNESCO, Paris 2012, p. 29.

¹⁸ D. Riedlinger, F. Berkes, *Contributions of Traditional Knowledge to Understanding Climate Change in the Canadian Arctic*, ‘Polar Record’ 2001, Vol. 37(203), p. 315.

¹⁹ United Nations High Commissioner for Refugees, *Indigenous Peoples’ Knowledge and Climate Adaptation*, Fact Sheet, 9 August 2020, <https://www.unhcr.org/5f3104104.pdf> (accessed 15.11.2022).

²⁰ J. Dawson et al., *Infusing Inuit and Local Knowledge into the Low Impact Shipping Corridors: An Adaptation to Increased Shipping Activity and Climate Change in Arctic Canada*, ‘Environmental Science & Policy’ 2020, Vol. 105.

infrastructure investments are prioritized. When corridors were first established, indigenous knowledge was not included in their development and ‘the corridors lacked local perspective from the people who know the area best and (...) the cultural significance of marine areas.’²¹ The input from the indigenous communities proved valuable and allowed a wider perspective. For example, community members from the Inuvialuit settlement region recommended that ships avoid Baillie Island area as a rare plant species grows on this Island, and thus they recommended that ships be limited to coming within 16 km offshore in order to limit coastal erosion in that area,²² while community members from Ulukhahtok recommended the creation of no ice-breaking zones as ice-breaking could negatively impact caribou migration routes.²³ This exemplifies that inclusion of indigenous knowledge into adaptive strategies can ensure protection of flora and fauna. However, integrating indigenous knowledge is beneficial not only for the ecosystems and communities concerned but also for the safety of other people. In this regard, in the context of Low Impact Shipping Corridors, Sachs Harbour community members recommended that Prince of Wales Strait ‘be avoided by all ships at all times’ as, in their view, ‘this Strait can be very dangerous as there is an island in the middle that is partially submerged by water thus there is a high risk of groundings or other accidents and incidents.’²⁴ In the global context, e.g. in Latin America and Australia, indigenous fire-management practices has been identified as ‘reducing the occurrence of dangerous fires, increasing biodiversity, and enhancing carbon sinks’, which is beneficial for the whole planet.²⁵

One of the adaptive methods of indigenous peoples is the exchange of traditional knowledge between different, and sometimes culturally distant, communities. As the current climate change distorts the migration patterns of various animals in Nunatsiavut, an autonomous area claimed by the Inuit in Newfoundland and Labrador in Canada, the Nunatsiavut Government is leading an indigenous knowledge exchange project with First Nations hunters from the Northwest Territories: ‘First Nations hunters will come to Nunatsiavut to build capacity and provide the necessary skills to Labrador Inuit related to moose harvesting and processing. In exchange, Labrador Inuit will share their expertise on the harvesting, processing and use of ringed seals.’²⁶

Some communities are working to address the changing climate by combining their indigenous knowledge with other information sources to try and predict weather events, for example, by collaborating with the NASA and using satellite

²¹ *Ibid.*, p. 20.

²² *Ibid.*, p. 27.

²³ *Ibid.*, p. 30.

²⁴ *Ibid.*, p. 27.

²⁵ J. D. Ford et al., *The Resilience of Indigenous Peoples to Environmental Change*, ‘One Earth’ 2020, Vol. 2(6), p. 535.

²⁶ Inuit Tapiriit Kanatami, *National Inuit Climate Change Strategy*, Ottawa 2019, p. 9.

research systems to complement their own observations, as in the case of reindeer herding in Siberia.²⁷ According to Cuthbert C. Makondo and David S. G. Thomas, whose research in Zambia focused on food security, the combination of traditional or indigenous and scientific knowledge is potentially one of the best ways to successful adaptation, as ‘modern problems cannot be solved with singular, mechanistic, science-centred solutions alone.’²⁸

Non-recognition and non-inclusion of indigenous perspectives and lack of culturally-specific approaches to adaptation to climate change can seriously hamper indigenous peoples’ possibilities of adaptation. James D. Ford, Graham McDowell and Tristan Pearce claim that adaptive capacity may not necessarily translate into actual adaptation²⁹ and, as W. Neil Adger et al. point out, cultural dimensions of climate change ‘are rarely and only partially included in conventional assessments of climate change impacts and adaptation.’³⁰ Therefore, the disregard for indigenous peoples culture should be identified as one of the obstacles to the successful adaptation.

4. VULNERABILITY DOES NOT FALL FROM THE SKY: OBSTACLES TO SUCCESSFUL ADAPTATION OF INDIGENOUS PEOPLES

Although indigenous peoples have been adapting to environmental conditions since the time immemorial, the current climate change is progressing faster than traditional knowledge can adapt and is strongly affecting people in many communities. Due to the worst snow condition, for example, the Inuit from Pangnirtung, Nunavut, Canada, are forced to use tents during their hunting trips:

The snow is not the same anymore. The bottom of the snow is a lot softer than it used to be. It’s no good for igloos anymore. [Twenty years ago] we used to be able to stop anywhere we needed a place to sleep just to build an igloo and sleep in that igloo. And nowadays you can’t just find good snow anywhere. In [those] days we used to find them anywhere. The condition of the snow is not very good, the bottom of it is

²⁷ K. Galloway McLean, *Land Use, Climate Change Adaptation and Indigenous Peoples*, Our World. United Nations University, 8 October 2012, <https://ourworld.unu.edu/en/land-use-climate-change-adaptation-and-indigenous-peoples> (accessed 15.11.2022).

²⁸ C. C. Makondo, D. S. G. Thomas, *Climate Change Adaptation: Linking Indigenous Knowledge with Western Science for Effective Adaptation*, ‘Environmental Science & Policy’ 2018, Vol. 88, p. 89.

²⁹ J. D. Ford, G. McDowell, T. Pearce, *The Adaptation Challenge in the Arctic*, ‘Nature Climate Change’ 2015, Vol. 5(12), p. 1050.

³⁰ W. N. Adger et al., 2013, *op. cit.*, p. 116.

very soft. So that's what I've notice in the snow as well – not only on the bottom but on the top as well.³¹

Tents, however, do not provide such good insulation as igloos and, what follows, the lack of good igloo snow poses a greater danger in emergency situations because igloos are vital emergency shelters during hunting trips.

Yet it is not only the rapidity of the climate change that can impede the successful adaptation of indigenous peoples. On the one hand, indigenous peoples have been identified as 'highly vulnerable' in the global climate change discourse, especially in studies focused on techno-engineering adaptations.³² On the other hand, a 'growing body of research illustrates that indigenous peoples have significant resilience and are actively observing and adapting to change in a diversity of ways.'³³ As noted above, historically indigenous peoples have demonstrated high adaptability, however, new vulnerabilities are emerging that relate to ongoing societal and environmental changes. As Jesse Ribot warns 'vulnerability does not just fall from the sky',³⁴ but it is rather socially constructed.

The colonization that indigenous peoples were subjugated to has still impact on their lives, making adaptation to climate change much more difficult. According to Mark Nuttall, Pierre-André Forest and Svein D. Mathiesen:

Today, Arctic peoples cannot adapt, relocate, or change resource use activities as easily as they may have been able to do in the past, because most now live in permanent communities and have to negotiate greatly circumscribed social and economic situations. The majority of indigenous peoples live in planned settlements with elaborate infrastructures and their resource activities are determined to a large extent by strict resource management regimes, regulatory and legal regimes, land use and land ownership regulations, quotas and local and global markets.³⁵

As such, the colonization during which indigenous peoples were forced to settle in a certain area, usually not of their choice, is now limiting their adaptive capabilities. This can be exemplified by the history of the Yup'ik village of Newtok. The Yup'ik used to be a seasonally nomadic indigenous group of what is now Alaska, who moved between camps as they hunted seals, moose, and musk oxen

³¹ Sh. Watt-Cloutier, Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States, 7 December 2005, http://www.ciel.org/Publications/ICC_Petition_7Dec05.pdf (accessed 15.11.2022), p. 42.

³² J. D. Ford, G. McDowell, T. Pearce, 2015, *op. cit.*, p. 1046.

³³ J. D. Ford et al., 2020, *op. cit.*, p. 532.

³⁴ See J. Ribot, *Vulnerability does not Just Fall from the Sky: Toward Multiscale Pro-poor Climate Policy*, (in:) M. R. Redclift, M. Grasso (eds), *Handbook on Climate Change and Human Security*, Edward Elgar Publishing 2013, pp. 164–172.

³⁵ M. Nuttall, P.-A. Forest, S. D. Mathiesen, *Adaptation to Climate Change in the Arctic*, A background paper prepared for the joint UArctic Rectors' Forum and Standing Committee of Parliamentarians of the Arctic seminar, Rovaniemi, 28 February 2008, pp. 4–5.

and gathered berries and wild greens, and for whom Newtok was just a winter settling place. Every spring before the river ice broke, the Yup'ik would travel across the river to Nelson Island where they set up summer tents. In the 1950s, however, the Bureau of Indian Affairs began building schools for the tribes in rural Alaska and a site was selected for them to settle without first seeking residents' input.³⁶ Not long after the village was established, the people of Newtok realized that the distant riverbank was eroding very quickly.³⁷ The rapid warming and rising of the sea level resulted in the village being almost inhabitable. Although in 2003 the Congress agreed to create the new village of Mertarvik on higher, volcanic ground and the plot of land was secured through a land exchange with the National Department of Fish and Wildlife, the relocation started only in October 2019.³⁸ It remains to be guessed whether the Yup'ik, had they been consulted in the 1950s, would need to be relocated due to coastal erosion induced by climate change.

The story of the Yup'ik raises a question whether migration should be considered an adaptation action. Although primarily migration was labelled as a consequence of climate change, currently it is being described as a form of human adaptation.³⁹ It is argued that, '[w]hile for some groups, under certain circumstances, migration can be an effective form of adaptation, for others it leads to increased vulnerabilities and a poverty spiral, reducing their adaptive capacities.'⁴⁰ Changing livelihood activities and relocation may be viewed as adaptation strategies by outsiders, but for communities this may represent the loss of important values.⁴¹ Under Article 10 of the UNDRIP: 'Indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return.' However, in many instances the exposure to the climate change and the inaction of states forces indigenous peoples to migrate, which in consequence renders them more vulnerable to discrimination and exploitation in destination areas. Moreover, a vast majority of indigenous communities does not want to leave their home areas.⁴² There is strong evidence that when people are displaced from places that they value, their cultures are diminished, and in

³⁶ C. Welch, *Climate Change has Finally Caught up to this Alaska Village*, 'National Geographic' 22 October 2019, <https://www.nationalgeographic.com/science/article/climate-change-finally-caught-up-to-this-alaska-village> (accessed 15.11.2022).

³⁷ *The Village – Newtok*, Relocate Network, <https://relocatenewtok.org/about> (accessed 15.11.2022).

³⁸ *Mertarvik*, Relocate Network, <https://relocatenewtok.org/mertarvik> (accessed 15.11.2022).

³⁹ K. Vinke et al., *Migration as Adaptation?* 'Migration Studies' 2020, Vol. 8(4), p. 626.

⁴⁰ *Ibid.*

⁴¹ J. D. Ford, G. McDowell, T. Pearce, 2015, *op. cit.*, p. 1050.

⁴² See I. Wiśniewska, *Migot. Z krańca Grenlandii*, Wydawnictwo Czarne 2022.

many cases endangered.⁴³ As such, migration should be considered a last-resort adaptation measure.

Another obstacle to successful adaptation of indigenous peoples is the lack of official title to their lands. In the Pacific Islands, for instance, the disposition of land has made indigenous peoples more vulnerable to drought impact since they do not have the ability to relocate or diversify their agriculture.⁴⁴ Also the resource-based activities of indigenous peoples are determined to a large extent by strict resource management regimes, which furthermore limits their adaptive possibilities. In their work in interior Alaska, F. Stuart Chapin et al. document how formal state and federal institutions that manage ecosystem services remain focused on controlling a single resource as opposed to managing whole ecosystems.⁴⁵ Current laws regulating the protection of the environment have restrictive effect on the lives of indigenous peoples, like for example in Greenland, where during most of the year the Inuit can only hunt seals, which do not provide enough meat to feed the families and whose meat is usually only sufficient to feed the dogs, used later in travel.⁴⁶ Moreover, the market value of seals is low and does not allow providing for a family. Without income or possibility of proper alimentation, the quality of life and possibility of adaptation to current climate changes are deteriorating.

5. CONCLUSION

Although climate change mitigation and adaptation are two core features of the system created by the UNFCCC and related instruments, they have different roles in fighting climate change. While the former addresses the cause of the problem and is generally managed in a top-down manner, the latter aims at managing climate risk at an acceptable level and involves a bottom-up approach.

As the research indicates, indigenous peoples very often bear the burden of mitigation undertakings. Although indigenous peoples have been identified as particularly vulnerable to climate change, the research shows that they demonstrate a high level of resilience and adaptive capacity. Yet, in order to be successful, the adaptation process must include indigenous worldviews, culture and traditional knowledge, and it must be conducted by indigenous peoples according

⁴³ W. N. Adger et al., 2013, *op. cit.*, p. 113.

⁴⁴ J. D. Ford et al., 2020, *op. cit.*, p. 535.

⁴⁵ See F. S. Chapin, et al, *Policy Strategies to Address Sustainability of Alaskan Boreal Forests in Response to a Directionally Changing Climate*, 'Proceedings of the National Academy of Sciences of the United States of America' 2006, Vol. 103(45).

⁴⁶ I. Wiśniewska, 2022, *op. cit.*, pp. 47–72.

to their customs.⁴⁷ As pointed out by W. Neil Adger et al., in climate change adaptation, ‘culture and politics interact to determine who has voice, whose values count and what information is legitimate.’⁴⁸ The roots of indigenous peoples’ sensitivity to climate change are closely linked to the experience of colonization and continued marginalization by the settler states. The obstacles to the successful adaptation to climate change include the rapidity of the current climate change, but also the disinterest in a culture-specific approach, represented by traditional knowledge, the lack of formally recognized ownership to indigenous lands and control over the resources. Therefore, in order to develop effective long-term adaptation strategies, it is necessary to remove or reduce the underlying structural determinants of vulnerability. Where indigenous rights are recognized and significant decision-making power is locally held, the resources are used in a sustainable manner, which contributes to the conservation of biodiversity and reduces deforestation and land degradation.⁴⁹ Since adaptation to climate change is something that primarily takes place at the local level, it is important that indigenous peoples themselves define the risks related to this rapid change.

As it has been shown, the integration of indigenous knowledge into adaptation actions can be beneficial both for the indigenous communities and for the non-indigenous parties involved. Therefore, the approach of the Paris Agreement, which underlines the value of indigenous knowledge, should be seen as an example of good practice and included into national legal systems. However, the efforts should not end there, as states should take into account not only the provisions of the Paris Agreement but also the UNDRIP recommendations. Although efforts are increased globally to protect indigenous rights, decisions on land use, development, and resource management continue to receive a limited input from indigenous peoples, and without addressing the underlying causes of vulnerability that are rooted in marginalization, disempowerment and colonization, there is hardly a chance for successful adaptation of indigenous peoples to climate change.

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⁴⁷ See E. K. Galappaththi, J. D. Ford, E. M. Bennett, F. Berkes, *Climate Change and Community Fisheries in the Arctic: A Case Study from Pangnirtung, Canada*, ‘Journal of Environmental Management’ 2019, Vol. 250.

⁴⁸ W. N. Adger et al., 2013, *op. cit.*, p. 114.

⁴⁹ J. D. Ford et al., 2020, *op. cit.*, p. 535.

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