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Research Article

IMPACT OF CLIMATE CHANGE ON THE LIVELIHOOD OF INDIGENOUS PEOPLE

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ABSTRACT

The rapid rise in the world's population and our ever-growing dependence on fossil fuel-based modes of production has played a considerable role in the growing concentration of greenhouse gases (GHG) in the atmosphere. As a result, global temperatures are increasing, the sea level is rising and precipitation patterns are changing, while storm surges, floods, droughts and heat waves are becoming more frequent and severe. Subsequently, agricultural production is decreasing, freshwater is becoming scarce, infectious diseases are on the rise, local livelihoods are being degraded and human well-being is diminishing. Although indigenous peoples' "low-carbon" traditional ways of life have contributed little to climate change, indigenous peoples are the most adversely affected by it. Climate change is drawing ever more consideration from the media, academics and even businesses, as evidence mounts about its measure and seriousness, and the rapidity at which it is affecting the world. But rarely does its impact on minorities and indigenous groups get a mention, even though they are among the worst affected. These people are rarely considered in academic, program and public discourses on climate change, despite the fact that they will be greatly impacted by future changes. Their livelihoods depend on natural resources that are directly affected by climate change, and they often inhabit economically marginal areas in diverse, but fragile ecosystems. Indigenous people are the primary actors in terms of global climate change monitoring, adaptation and innovation. Indigenous and other local peoples are vital and active parts of many ecosystems and may help to enhance the flexibility of these ecosystems. In addition, they understand and react to climate change impacts in creative ways, drawing on traditional knowledge as well as new technologies to find solutions, which may help society at large to cope with the approaching changes. Indigenous people will also need the support of the global community to continue their role as traditional caretakers of marginal and fragile ecosystems. So one should try to recognize how indigenous and other local peoples are affected by global climate change, and how they perceive and react to these changes. The focus should be not only on the plight of indigenous peoples, but also on their resourcefulness and active responses to climatic variation.

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INTRODUCTION

The rapid rise in the world's population and our ever-growing dependence on fossil fuel-based modes of production has played a considerable role in the growing concentration of greenhouse gases (GHG) in the atmosphere. As a result, global temperatures are increasing, the sea level is rising and precipitation patterns are changing, while storm surges, floods, droughts and heat waves are becoming more frequent and severe. Subsequently, agricultural production is decreasing, freshwater is becoming scarce, infectious diseases are on the rise, local livelihoods are being degraded and human well-being is diminishing.

The very identity of indigenous peoples is inextricably linked with their lands, which are located predominantly at the social-ecological margins of human habitation — such as small

islands, tropical forests, high-altitude zones, coasts, desert margins and the circumpolar Arctic. Here at these margins, the consequences of climate change include effects on agriculture, fishing, hunting and gathering and other subsistence activities, including access to water. Although indigenous peoples' "low-carbon" traditional ways of life have contributed little to climate change, indigenous peoples are the most adversely affected by it.

Indigenous and other traditional people are only rarely considered in academic, program and public discourses on climate change, despite the fact that they will be greatly impacted by future changes. Their livelihoods depend on natural resources that are directly affected by climate change, and they often inhabit economically marginal areas in diverse, but fragile ecosystems. Indigenous people are the primary actors in terms of global climate change monitoring, adaptation

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and innovation. Indigenous and other local peoples are vital and active parts of many ecosystems and may help to enhance the resilience of these ecosystems. In addition, they understand and react to climate change impacts in creative ways, drawing on traditional knowledge as well as new technologies to find solutions, which may help society at large to cope with the approaching changes. Indigenous people will also need the support of the global community to continue their role as traditional caretakers of marginal and fragile ecosystems. So one should try to recognize how indigenous and other local peoples are affected by global climate change, and how they perceive and react to these changes. The focus should be not only on the plight of indigenous peoples, but also on their resourcefulness and active responses to climatic variation.

People have faced climate change and adapted to it since our species evolved. From archaeology, one can understand of past human adaptation to and modification of climate change. There have been major changes in hydrological events and also in extreme weather events, as well as temperature changes during the Holocene. The 'Anthropogenic' -human activities – largely deforestation and agriculture – resulted in CO₂ and CH₄ increases over the last few years.

Prehistorically, biodiversity of the earth has been devastated during periods of drastic climate change. During human history, climate change, societal change and biodiversity have been closely linked. Biodiversity is central to indigenous environmental management and livelihoods. Biodiversity is especially important among indigenous societies living on the margins of fragile and changing ecological, economic, and political systems. Nonetheless, biodiversity itself is threatened by climate change.

Indigenous observations and interpretations of meteorological phenomena are at a much finer scale, have considerable temporal depth and highlight elements that may be marginal or even new to scientists. They focus on elements of significance for local livelihoods, security and well-being, and are thus essential for adaptation.

Indigenous peoples' observations contribute importantly to advancing climate science, by ensuring that assessments of climate change impacts and policies for climate change adaptation are meaningful and applicable at the local level.

Indigenous responses to climate variation typically involve changes to livelihood practices and other socio-economic adjustments. Strategies such as engaging in multiple livelihood activities and maintaining a diversity of plant varieties and animal races provide a low-risk buffer in uncertain weather environments. The ability to access multiple resources and rely on different modalities of land use contributes to their capacities to manage for local-level climate change.

Main objectives of the study

- To predict the possible impacts of climate change on the livelihoods of Indigenous peoples
- To make visible their adaptation and coping strategies in response to those short term climatic variations in an effort to share the lessons learnt, and to advocate for contextual national climate change policies.
- How do indigenous communities perceive climate change, its causes and impacts?

- What is their awareness and knowledge of climate change?
- What are the strategies that have been adopted by indigenous communities to cope with the changes in the climate?

The general impacts of climate change on indigenous people worldwide

Indigenous peoples are among the first to face the direct consequences of climate change, owing to their dependence upon, and close relationship with the environment and its resources. Climate change exacerbates the difficulties already faced by vulnerable indigenous communities, including political and economic marginalization, loss of land and resources, human rights violations, discrimination and unemployment.

Climate change is projected on a global scale and is a global phenomenon. However, different areas and different environments are affected very differently. People too will face different aspects of climate change depending on where they live. We divide the world into broad environmental categories within which there are some climate change commonalities but also much local and regional variation.

- In the high altitude regions of the Himalayas, glacial melts affecting hundreds of millions of rural dwellers who depend on the seasonal flow of water is resulting in more water in the short term, but less in the long run as glaciers and snow cover shrink.
- In the Amazon, the effects of climate change include deforestation and forest fragmentation, and consequently, more carbon released into the atmosphere exacerbating and creating further changes.
- Droughts result in fires in some of the forest and desert regions. This is likely to occur again as rainforest is replaced by savannas, thus having a huge affect on the livelihoods of the indigenous peoples in the region.
- Indigenous peoples in the Arctic region depend on hunting for polar bears, seals and herding reindeer, fishing and gathering, not only for food to support the local economy, but also as the basis for their cultural and social identity.
- Some of the concerns facing indigenous peoples there include the change in species and availability of traditional food sources, perceived reduction in weather predictions and the safety of traveling in changing ice and weather conditions, posing serious challenges to human health and food security.
- Rain and mild weather during the winter season often prevents reindeer. from accessing lichen, this is a vital food source. This has caused massive loss of reindeer, which are vital to the culture, subsistence and economy of communities. Reindeer herders must, as a result, feed their herds with fodder, which is expensive and not economically viable in the long term.
- Rising temperatures, hill expansion, increased wind speeds, and loss of vegetation are negatively impacting traditional cattle and goat farming practices of indigenous peoples who must now live around

government-drilled bores in order to access water and depend on government support for their survival.

Managing Strategies of indigenous communities

- Shifting to other livelihoods, less risky to climate change
- Adjusting cropping patterns
- Planting early mature crops
- Practicing multi-cropping
- Fighting loss of biodiversity and adapting to climate change
- Water conservation techniques
- Land reclamation
- Shift their agricultural activities which are less susceptible to adverse climatic conditions

Major climate change challenges

A number of challenges arising from climate change are critical to the lives of Indigenous people. These challenges will require specific strategies to reduce the impacts on Indigenous people. Some of the challenges presented by climate change include:

- access to information
- pressures on Indigenous lands and waters – environmentally, culturally, socially and economically
- health and well-being of Indigenous people – psychologically and physically
- protection of Indigenous knowledge's
- Limited alternative livelihood options and lack of finance
- Effects of current and future responses to climate change (policy and regulation) on existing legal rights and interests.

Our role in supporting indigenous communities

- Capacity building (awareness, information, training, early warning systems).
- Self-representation of Indigenous Peoples in Climate Change forum
- Access to compassionate loan facilities to construct more climate resilient homes.
- Building and supporting social capital
- Include funding and technical or skill transfer initiatives to ensure capacity for adaptation in Indigenous communities.
- Construction of knowledge bank and documenting knowledge and insights on Climate Change, weather patterns and indigenous climatology changes in abundance, distribution, seasonal development and interactions of plant and animal species
- Health and welfare changes
- Recommended and instituted adaptations, mitigations and policies
- To promote respect for the local and traditional knowledge at the national and local levels.
- To empower indigenous peoples to have a greater say in developing global, regional and local policies to address climate change that are supportive of their knowledge, culture and self-determined development.
- Collaborative project planning between Indigenous people and Scientists.
- The protection of Indigenous interests, specifically access to our lands, waters and natural resources and ecological knowledge the protection of Indigenous areas of significance, biodiversity, and cultural heritage

- The protection of Indigenous knowledge relevant to climate change adaptation and mitigation strategies access and benefit-sharing through partnerships between the private sector and Indigenous communities
- non-discrimination and substantive equality
- access to information and support for localized engagement and consultation

CONCLUSION

The partial success of the use of traditional knowledge in coping with climate change leads to the conclusion that a healthy relationship between scientific knowledge and traditional or indigenous knowledge which both have their limitations is desirable.

To capitalize on, develop, expand and mainstream indigenous adaptation measures into global adaptation strategies, traditional knowledge should be further studied, supported and integrated into scientific research. Incorporating indigenous knowledge is less expensive than bringing in aid for populations unprepared for catastrophes and disasters, or than importing adaptive measures which are usually introduced in a top-down manner and difficult to implement, particularly because of financial and institutional constraints.

There is much to learn from indigenous, traditional and community-based approaches to natural disaster preparedness. Indigenous people have been confronted with changing environments for millennia and have developed a wide array of coping strategies, and their traditional knowledge and practices provide an important basis for facing the even greater challenges of climate change. Although their strategies may not succeed completely, they are effective to some extent and that is why the people continue to use them. While indigenous communities will undoubtedly need much support to adapt to climate change, they also have expertise to offer on coping through traditional time-tested mechanisms.

Climate change is already having serious implications on the livelihoods of the targeted communities, although they have used local strategies to adapt to the changes, the magnitude of future hazards may limit their capacity to adapt. Survey results indicated that there was limited awareness, knowledge and capacity at local level to understand climate change and this may hinder local adaptation capacity. There needs to be synchronized efforts of the bottom-up and top-down approaches to climate change adaptation at the community level.

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