Traditional ecological knowledge and community resilience

In our context, traditional ecological knowledge (TEK) refers to the knowledge about the natural environment that indigenous and local community members have amassed throughout their history and which continues to be added to by the present generations. It includes all that is known about how their environment used to be and how it continues to change.

Traditional ecological knowledge from indigenous and local communities provides a strong foundation for the development of local, appropriate strategies and solutions to adapt to environmental change. By integrating their traditional knowledge into their efforts to maintain and restore ecosystems, communities can also reaffirm their link to their natural environment.

Engaging communities to build resilience and adapt to climate change across North America

Under the CEC project, experts and community members from Canada, Mexico and the United States developed pilot projects in the communities of Georgina Island First Nation (Ontario, Canada) and El Mingo (Tabasco, Mexico). They considered the experiences of communities in southern California (United States) that have applied the Proper Functioning Condition (PFC) ecosystem assessment in their tribal lands.

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Under its 2015–2016 project, *Using Ecosystem Function and Traditional Ecological Knowledge Together to Build Resilience and Adapt to Climate Change in North America*, the CEC facilitated the exchange of tools, methodologies and assessments developed in Canada, Mexico and the United States to support the development of ecosystem-based, local adaptation in communities vulnerable to the effects of climate change.

The project demonstrates the role of traditional ecological knowledge, community engagement, and knowledge sharing in building resilient communities in North America.

Other indigenous and local communities across North America can learn from this experience and build on it as they work on local solutions to reduce their vulnerability to the effects of climate change.

The **Commission for Environmental Cooperation** (CEC) facilitates collaboration and public participation to foster conservation, protection and enhancement of the North American environment for the benefit of present and future generations, in the context of increasing economic, trade, and social links among Canada, Mexico, and the United States.

Indigenous and Northern Affairs Canada

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INSTITUTO NACIONAL DE ECOLOGÍA Y CAMBIO CLIMÁTICO

Ecosystem Function and Traditional Ecological Knowledge:

building resilience and adapting to climate change in North America

Commission for Environmental Cooperation

The importance of healthy ecosystems

Streams, wetlands and mangrove forests help maintain a healthy and productive living environment for the indigenous and local communities that depend on them. These ecosystems perform many beneficial functions, serving as habitat for plants and animals, providing a home for fish and other sources of food, preventing erosion and protecting from floods and weather events.

Adapting to climate hazards

Changes in the frequency, intensity and timing of weather events such as rainstorms and hurricanes have brought new challenges to many communities. By maintaining healthy ecosystems and restoring their functions, communities can help reduce the detrimental effects of these hazards and be more resilient to a changing environment.

Allowing the natural flow of water in streams, wetlands and mangrove forests helps maintain their role in reducing the impact of extreme weather events. For example, during storms, streams and wetlands can help prevent flooding by absorbing surplus rain and mangrove forests can act as a protective barrier against the sea.

A community perspective

Indigenous and local communities live in close contact with their environment: they know it intimately, depend on it, and are directly affected by its degradation. Therefore, efforts to maintain, restore and manage healthy ecosystems are more likely to succeed if they integrate the traditional knowledge of these communities.

Integrating TEK

Building on existing climate change adaptation efforts in each community, the communities drew upon their traditional ecological knowledge to understand the local context, existing environmental issues they faced, and the impacts of those issues on the ecosystem and the community.

Sharing knowledge across borders

In identifying and implementing local solutions to build ecosystem-based resilience, the communities also benefitted from other knowledge from the three countries. After learning about the TEK survey tool used in Canada, the community engagement strategies used in Mexico, and the Proper Functioning Condition ecosystem assessment methodology used in the United States, the communities were able to develop approaches adapted to their specific needs.

Distant communities, common experiences

Community members were brought together to share experiences and lessons learned. They saw how communities across North America are experiencing similar problems and applying local solutions based on their knowledge. They drew common lessons, agreeing on the importance of:

- raising awareness about the need to be thankful to nature and giving back to it
- committing to rescuing ecosystems for generations to come
- committing to rescuing local and traditional knowledge
- highlighting their local culture and identity
- including the community in all efforts
- highlighting the work and participation of women, men, young people, boys and girls
- uniting as a community and celebrating the progress made to motivate those involved
- recognizing the value of collective work as a process.

As next steps, they recommended monitoring the work with the communities to support continued efforts to deal with the negative effects of climate change.

Restoring a creek to build resilience to climate change impacts

Georgina Island First Nation, Ontario, Canada

- Identifying the degradation of the riparian ecosystem that has contributed to increased flooding in the community
- Engaging community members to identify and remediate a site important to them
- Implementing the recommendations from the Proper Functioning Condition assessment, allowing the restoration of waterflow to a degraded stream
- Engaging people to maintain healthy ecosystems through community-oriented activities
- Developing a children's coloring book integrating Ojibwe language, to tell the story of the creek, and a brochure to share the GIFN experience more broadly

Managing waste at the community level to increase resilience

El Mingo, Tabasco, Mexico

- Identifying accumulated garbage as a hindrance to water flow in the mangrove forest ecosystem that is home to the community
- Conducting training workshops with schools and women's groups to share knowledge about the importance of waste management (reusing, recycling and composting)
- Implementing a community-oriented waste management program to help restore a healthy coastal ecosystem which benefits local communities
- Developing three manuals: a coloring storybook for children to raise awareness of their environment, a short manual on addressing waste management in the community, and a longer guide for community experts on waste management and community engagement

Using Proper Functioning Condition methodology to restore riparian ecosystems

California, United States

- Demonstrating the Proper Functioning Condition (PFC) assessment methodology in the United States, for application in Canada and Mexico
- Conducting PFC assessments of riparian and coastal ecosystems at selected sites in Canada and Mexico
- Providing recommendations of actions required to restore ecosystem function
- Sharing material and lessons learned to support PFC assessments in the three countries