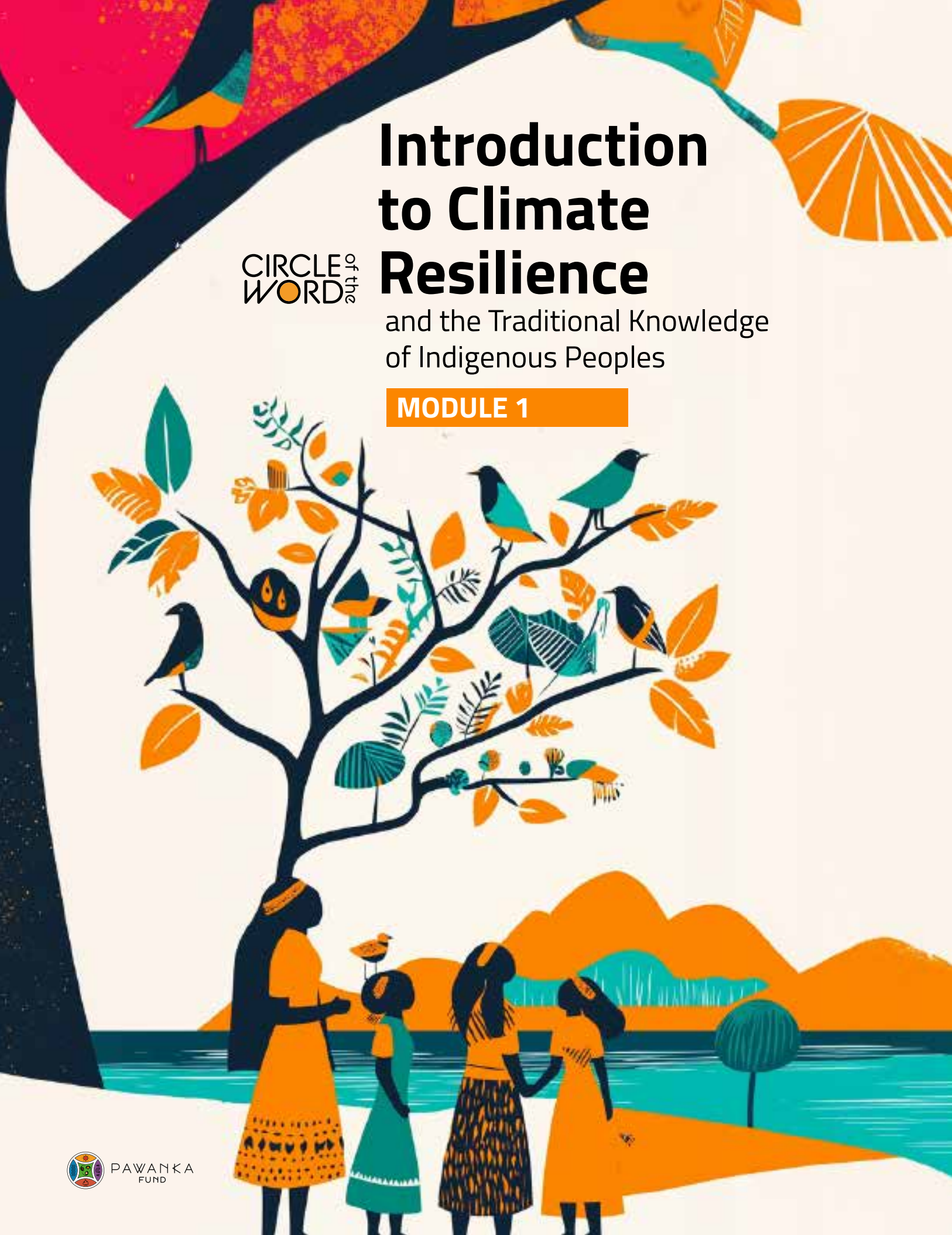




CIRCLE of the
WORD

Introduction to Climate Resilience

and the Traditional Knowledge
of Indigenous Peoples

MODULE 1



PAWANKA
FUND

CIRCLE of the WORD

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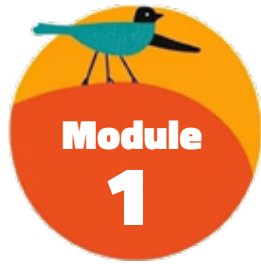


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• To learn



- What is climate resilience?
- Ancestral knowledge and its importance in climate adaptation
- Threats and challenges to traditional knowledge systems

• To make



- We know our community
- We developed the travel guide



To Learn





In this document you will find these symbols that represent:



TIPS

Particular advice on the subject under discussion.



REMEMBER

Key issues that need to be remembered.



GET TO KNOW

Extra help to research and learn more about the topic.

Introduction

Indigenous Peoples are among those most affected by the climate crisis, despite having contributed minimally to it. These communities often inhabit environmentally sensitive regions (tropical forests, arctic zones, high mountains, low-lying islands, deserts, etc.) and are directly dependent on ecosystems for their livelihoods and culture.

As a result, climate change seriously threatens their livelihoods, well-being and cultural practices. For example, increasing climate variability (more intense droughts, floods, melting ice) is already affecting food security and water availability for many Indigenous Peoples. In the Arctic, warming has reduced the pasture available for reindeer, causing massive losses of these animals, which are fundamental to the Saami people's culture and economy.

These differentiated impacts highlight the particular vulnerability of indigenous peoples to climate change, further compounded by the political and historical marginalization that limits their capacity to respond. Paradoxically, Indigenous Peoples also play a crucial role in protecting the global environment. Their traditional territories cover about 22% of the world's land surface and coincide with areas that are home to 80% of the world's biodiversity, and it is estimated that they directly manage at least 36% of the world's intact forests, acting as guardians of important carbon sinks and biodiversity reserves.

Therefore, strengthening the climate resilience of Indigenous Peoples is not only an imperative of justice, but also benefits the planet as a whole. In this first module of our course on climate resilience and traditional knowledge of Indigenous Peoples we will learn and explore not only all the impacts but especially the contributions of their knowledge to address the climate crisis.



What is climate resilience?



Resilience: the ability to withstand and adapt.

The word resilience means the capacity to adapt and recover after facing a difficulty. In the case of climate resilience, we refer to the capacity of communities, ecosystems and production systems to resist and adapt to changes brought about by the climate, such as droughts, heavy rains, floods or changes in seasons. To understand it better, let's think of a tree in the middle of a storm. If the tree is strong and flexible, it will be able to withstand the wind without breaking. But if the tree is weak, it may fall. The same is true for communities and nature: if they are prepared and have the tools to face climate change, they will be able to resist and move forward without losing their balance.

Why do we need climate resilience?

The climate is changing around the world, and this affects all people, but especially Indigenous Peoples who depend on land, water and forests for their livelihoods. Some effects of climate change that are already being seen include:

- **Higher temperatures:** days are hotter and droughts last longer.
- **Irregular rainfall:** in some regions it rains too much, causing floods, and in others it rains too little, affecting crops.
- **New pests and diseases:** the change in temperature favors the appearance of pests that affect crops and diseases that affect people and animals.
- **Loss of land and water:** rivers are drying up and many communities face soil erosion, making it difficult to plant and harvest.

Indigenous Peoples, with their ancestral knowledge, have been resilient for centuries. They have learned to read nature, adapt to changes and take care of ecosystems to continue living in harmony with the environment. However, today's climate change is more rapid and extreme, so it is essential to strengthen that resilience.



Restoration of Bilwi Coastal Ecosystems:

A collaborative effort in the aftermath of hurricanes Eta and Iota

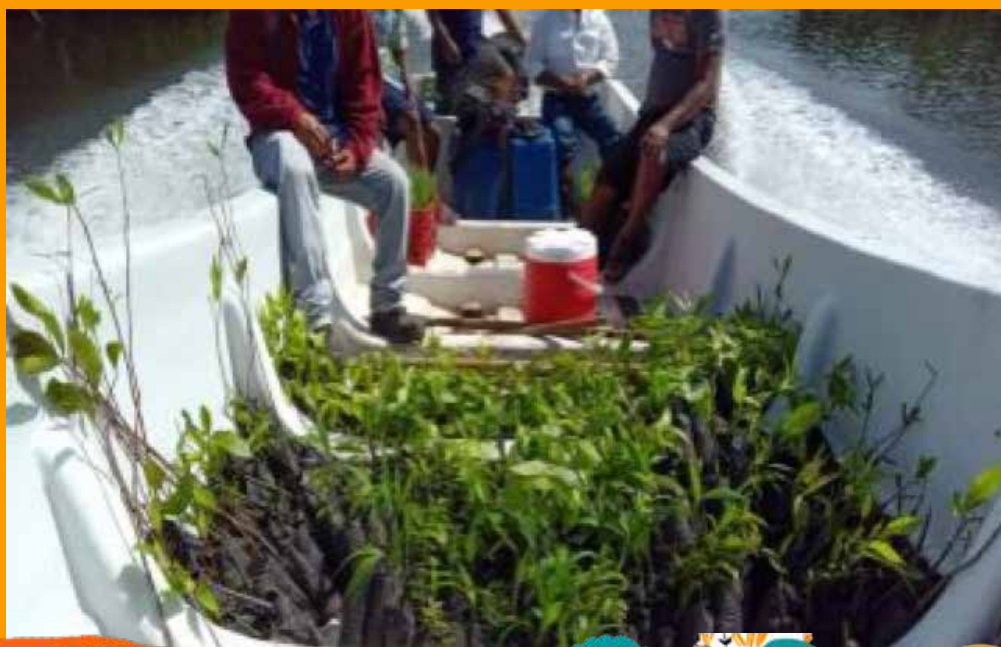
Puerto Cabezas, or Bilwi as it is commonly known, is located on the northern Caribbean coast of Nicaragua, a region that is home to lush mangrove forests. These mangroves are not only home to a great diversity of plant and animal species, but also act as natural barriers against erosion and unpredictable weather patterns, playing a crucial role in protecting biodiversity and supporting local fishing and tourism industries. In addition, they function as carbon sinks, helping to mitigate the impacts of climate change. T

he Miskito Indigenous People and Afro-descendants of Bilwi have cultivated a deep connection to their environment, relying on the mangrove forest for their sustenance and livelihoods. For generations, they have practiced sustainable fishing and preserved their ancestral knowledge, forming the basis of their cultural, spiritual and economic identity. These communities have prospered through family farming, along with commercial activities such as water transportation, while maintaining a harmonious coexistence with nature.



Like many other communities in the region, Bilwi was hit hard by hurricanes Eta and Iota in November 2020. These storms, which made landfall within weeks of each other, had a devastating impact on both the local mangrove ecosystem and the community. Mangrove forests, essential for biodiversity, erosion control and climate resilience, suffered significant damage, threatening the cultural and economic foundations of the Indigenous Peoples. The aftermath of these storms presented numerous challenges for the inhabitants, including damage to infrastructure, loss of homes and livelihoods, as well as the disruption of essential services such as water and electricity supply. Indigenous Peoples, who depend on fishing, agriculture and water transport, were particularly hard hit: their boats were destroyed, crops and farmland washed away. Many families were displaced from their ancestral lands, breaking cultural ties and traditional practices, and were forced to migrate to safer areas.

Recognizing the vital role of mangroves in coastal protection, leaders from the community of El Cocal and the Bilwi Intercultural Center for Technological Innovation joined forces, with support from the Pawanka Fund, to restore these ecosystems through community-led collaborative efforts. The project aimed to rebuild hurricane-damaged mangrove ecosystems and nurture the indigenous knowledge of Miskito and Afro-descendant peoples to mitigate the impacts of climate change in the future. The focus was on reintroducing native forest species to restructure marine habitats and increase resilience to climate disasters.



The project's restoration efforts along the Bilwi coastal strip included the reintroduction of native forest species, particularly mangroves, through community participation. Community leaders, indigenous women and youth acted as guardians of ancestral knowledge, promoting environmental stewardship and the exchange of knowledge between generations.

To facilitate the transmission of indigenous knowledge between generations, workshops were held on tree planting and proper care for their growth and development, with the participation of the community. A nursery was established in Bilwi that houses a variety of native species, including 3,500 coconut plants. In total, 20,000 native plants, including mangroves and fruit trees, were transplanted in the coastal areas of Bilwi, particularly in the community of El Cocal. These species were selected based on community needs, such as economic, food or medicinal uses, and also to improve the soil structure and landscape. Multiple signs were installed along the coastal zone to raise awareness about forest restoration and environmental management practices in the area.

In parallel, workshops were held on community forestry and sustainable soil management, empowering indigenous youth, women and community leaders to take the lead in the restoration process. These workshops highlighted the importance of incorporating indigenous knowledge to mitigate the impacts of climate change and prevent climate-related disasters. In addition, a guide was developed that includes good forestry and environmental practices, including community commitments to environmental preservation and encouraging the participation of indigenous women and youth.





The project also fostered partnerships with government institutions to ensure the sustainability of reforestation efforts and strengthen community resilience in the face of climate change. The Center for the Autonomy and Development of Indigenous Peoples (CADPI) and the Ministry of Environment and Natural Resources (MARENA) collaborated in the delivery of seedlings to several communities in the region, including Tuapi, Karata, El Cocal and Poza Azul. These actions highlight the broader impact and reach of the restoration initiative by reaching more locations within the region.

Despite adverse weather conditions during project implementation, the Bilwi Indigenous Peoples demonstrated resilience and determination to protect their environment and way of life. The project provided valuable lessons learned that encompass the importance of communication, inclusive decision-making, community participation, adaptive management strategies, and the value of indigenous knowledge in building climate-resilient communities. The recovery of the Bilwi coastal ecosystem, as mangrove seedlings take root, exemplifies how indigenous knowledge and collective action can guide successful community initiatives.

This project offers valuable lessons for conservation efforts globally, highlighting the fundamental role of indigenous communities in environmental stewardship and climate resilience.



How does climate change affect Indigenous Peoples?

Climate change affects Indigenous Peoples in disproportionate and multidimensional ways. In general terms, it threatens their overall well-being, their traditional livelihoods and even their sovereignty over basic resources. Many Indigenous Peoples depend on hunting, fishing, subsistence agriculture and gathering, activities that are closely linked to stable weather patterns.

Therefore, alterations in rainfall, extreme temperatures, melting glaciers or rising sea levels have direct effects on their food security and health. In the Andes, for example, the reduction of glaciers and water scarcity due to global warming are already harming agriculture and the supply of Quechua and Aymara communities.

These impacts are not only economic but also cultural and spiritual. For many Indigenous Peoples, land, animals and plants have deep cultural significance. The loss of local species, the alteration of seasonal cycles or the need to migrate in the face of climatic disasters threaten to break the transmission of traditional knowledge and ancestral practices. In fact, climate-forced migration can lead to the loss of traditional knowledge, with negative consequences not only for the original communities but also for the cultural diversity of all humanity. Indigenous Peoples have lived in balance with nature for centuries.

Their culture, food and way of life are deeply linked to the land, water and climate cycles. However, climate change is upsetting that balance and putting their survival at risk. As the climate changes, Indigenous Peoples face greater difficulties in obtaining food, water and building materials, and in maintaining their traditions and connection to territory.



1. Impact on food and agriculture

Climate change is seriously affecting the food security of Indigenous Peoples. This is because many of them depend on traditional agriculture, hunting, fishing and wild food gathering.

Problems they face:

Longer and more frequent droughts: The lack of rain is reducing the amount of water available for irrigation and decreasing the production of crops such as corn, quinoa and cassava.

Flooding and irregular rainfall: In some regions, rain arrives unpredictably and in excessive amounts, damaging crops and eroding the soil.

New crop pests and diseases: Higher temperatures favor the appearance of insects and fungi that destroy crops.

Disappearance of traditional species: Some crops that used to grow well in certain regions now cannot withstand the new climatic conditions.



Andean farmers have developed seed banks of native climate-resistant species such as potato, quinoa and tarwi. These seeds have been selected for centuries for their ability to withstand frost and drought.



In the Amazon, Indigenous Peoples practice shifting cultivation, leaving the land to rest after each crop so that it can regenerate and continue to produce food without depleting nutrients.



2. Water scarcity and river degradation

Water is fundamental to the lives of Indigenous Peoples, not only for human consumption, but also for agriculture, fishing and sacred rituals. However, climate change is affecting water access and quality in many regions.

Problems they face:

- Decrease in rivers and lagoons: In the Andes and the Amazon, many water sources are drying up due to reduced rainfall and accelerated glacier melting. Water pollution: Changing rainfall patterns and industrial activity are affecting water quality, making it difficult to use for drinking and irrigation. Change in water availability: In many communities, water is no longer available at times when it was traditionally needed, affecting agriculture and animal husbandry.



In Mexico and Guatemala, the Maya have developed developed rainwater harvesting systems rainwater harvesting systems that allow them tothem to store water in times of drought.



The Indigenous Peoples of the Chaco (Argentina, Paraguay and Bolivia) build community wells to guarantee access to water in times of drought.



3. Loss of forests and biodiversity

Indigenous Peoples have been the guardians of biodiversity for centuries, protecting forests, jungles and natural ecosystems. However, climate change is severely affecting these environments and the way communities depend on them.

Problems they face:

- Accelerated deforestation: Rising temperatures and human activities (mining, intensive cattle ranching, logging) are destroying forests.
- Forest fires: The drier and hotter climate is increasing the frequency and severity of fires, destroying indigenous territories.
- Disappearance of animal and plant species: Changes in climate are affecting the reproduction and migration of species essential to the food and culture of Indigenous Peoples.



The Indigenous Peoples of the Amazon practice reforestation with sacred trees and species that help maintain the balance of the ecosystem.



In Australia, Aboriginal people use "controlled burning" techniques to prevent forest fires by reducing combustible material in the forest without damaging biodiversity.



4. Forced displacement and loss of territory

Climate change is forcing many indigenous communities to abandon their ancestral territories due to desertification, coastal erosion and natural disasters.

Problems they face:

- Loss of arable land: Many regions are becoming unproductive due to drought or soil salinization.
- Sea level rise: Indigenous peoples on islands and in coastal areas are losing their homes due to erosion and flooding.
- Disappearance of sacred sites: Many spiritually important areas for indigenous peoples are disappearing due to climate change.



Alaska Native peoples are adapting their homes and relocating their housing and communities to safer areas.



In the Pacific islands, indigenous communities are building natural seawalls with coral and mangroves to protect their land from rising sea levels.



5. Impact on the health and well-being of communities.

Climate change is increasing health problems in many Indigenous Peoples, as higher temperatures and extreme weather events facilitate the spread of disease.

Problems they face:

- Increase in respiratory diseases due to smoke from forest fires and air pollution.
- Spread of tropical diseases such as dengue fever and malaria in new regions.
- Malnutrition and food shortages due to reduced agricultural production and loss of animal species.



Indigenous communities have strengthened the use of traditional traditional medicine to treat illnesses with medicinal plants and healing rituals.



In the Amazon, indigenous women have developed medicinal gardens to ensure access to healing plants.



Differential Impacts of Climate Change on Indigenous Peoples

Climate change affects Indigenous Peoples in disproportionate and multidimensional ways. In general terms, it threatens their overall well-being, their traditional livelihoods and even their sovereignty over basic resources.

Many Indigenous Peoples depend on hunting, fishing, subsistence agriculture and gathering, activities that are closely linked to stable weather patterns. Therefore, alterations in rainfall, extreme temperatures, melting glaciers or rising sea levels have direct effects on their food security and health. In the Andes, for example, the reduction of glaciers and water scarcity due to global warming are already harming agriculture and the supply of Quechua and Aymara communities.

These impacts are not only economic but also cultural and spiritual. For many Indigenous Peoples, land, animals and plants have deep cultural significance. The loss of local species, the alteration of seasonal cycles or the need to migrate in the face of climatic disasters threaten to break the transmission of traditional knowledge and ancestral practices. In fact, climate-forced migration can lead to the loss of traditional knowledge, with negative consequences not only for indigenous communities but also for the cultural diversity of humanity as a whole.

Likewise, infrastructure and basic services are often precarious in indigenous territories, which increases their vulnerability to extreme events (storms, prolonged droughts, flash floods).



REMEMBER

Indigenous Peoples face unique climate risks that exacerbate existing inequalities, threatening their physical and cultural continuity.



Ancestral knowledge and its importance in climate adaptation



What is traditional knowledge and how is it transmitted?

Ancestral knowledge - also known as indigenous traditional knowledge - are ways of understanding, living and caring for the world that have been constructed and perfected by Indigenous Peoples over thousands of years of relationship with their territories.

This knowledge includes:

- How to sow and harvest according to lunar cycles or environmental signals.
- How to read the behavior of animals or the sky to predict changes in the weather.
- How to protect soils, forests, rivers and mountains so that they remain a source of life.
- How to cure diseases with medicinal plants of the territory.
- How to organize community life in a fair and balanced way, based on respect and cooperation.

Ancestral knowledge is not written in books, but is transmitted from generation to generation through word, practice and example. Grandfathers and grandmothers are the bearers of memory, and they teach their children and grandchildren by observing nature, walking the territory, planting together, or sharing stories at campfires or rituals.

"Knowledge is not only in the head, it is in the heart, in the hands and in the steps we take on the earth." -Kichwa sage, Ecuador. These knowledges adapt and transform, because Indigenous Peoples continuously observe their environment and adjust their practices to the changes they face. Therefore, they are a living source of innovation and climate adaptation.



Spiritual, cultural and ecological relationship with nature.

For Indigenous Peoples, the relationship with nature is deeply spiritual, cultural and ecological. Unlike the dominant Western view that tends to see nature as a resource to be exploited, many indigenous cultures consider the Earth as a living being with which they maintain a relationship of respect, reciprocity and sacredness.

From an indigenous perspective, the separation of the values and beliefs that sustain a community from an understanding of development, 'progress' or resilience is unacceptable. For example, Andean worldviews speak of Pachamama (Mother Earth) as a sacred entity that provides life and to whom offerings and respect are due; similarly, peoples in North America refer to the Earth and the elements (rivers, mountains, forests) as "mother" or "siblings" within their spiritual family.

This animistic perspective recognizes the personality of natural entities: rivers, mountains or forests can be considered as having rights and spirit. According to this worldview, the purpose of human beings is not to dominate nature, but to cultivate a deep spiritual relationship of exchange and care with it.



TIPS

"Indigenous Peoples do not see nature as a source of services or economic value, but rather as a living entity in relationship with them... the purpose as humans is to develop a relationship of respect and reciprocity that is not based on exploitation"



Spiritual Relationship:

Many Indigenous Peoples see land and natural resources as inextricably linked to their identities, cultures, livelihoods, and physical and spiritual well-being. Their cultural belief systems regulate people's relationships with the spiritual world through various rituals, cultural practices or spiritual connections to the land and natural resources, often protecting local natural resources and ecosystems. For many Indigenous Peoples, deities and/or ancestors inhabit the natural world, so the landscape itself is imbued with spiritual significance and sacred sites. Areas of spiritual significance often hold deep cultural and spiritual value for Indigenous Peoples, representing ancestral connections, traditional knowledge and cultural heritage.

Access to these sites allows them to maintain their cultural continuity, strengthen their sense of identity, and preserve traditional practices that contribute to social cohesion and resilience in the face of environmental change. Spiritual sites provide spaces for spiritual healing, ceremonies, and community gatherings, promoting mental health, emotional resilience, and social support networks within Indigenous Peoples.

The Indigenous Peoples of the Sierra Nevada de Santa Marta in Colombia, such as the Kogui, Arhuaco, Wiwa and Kankuamo, maintain a deep spiritual connection with nature and their territories, considering nature as a sacred entity and the Sierra Nevada as the heart of the world. The Batwa of the Congo consider the forest as a "nurturing mother" and the "cemetery of their ancestors", believing that trees, rivers, animals, birds, fish or insects have "souls" or "spirits" and that their ancestors reside in the earth.



Cultural Relationship:

Indigenous knowledge systems, cultural practices and spiritual values serve as the unifying force of Indigenous Peoples' resilience. These knowledge systems embody a wealth of wisdom and information gained over centuries from empirical observations and practices, often passed down from generation to generation, covering a wide range of topics and including a deep understanding of local ecosystems, ecological services and sustainability.

Separating the values and beliefs that underpin a community from an understanding of development, 'progress' or resilience is anathema to most Indigenous Peoples. Most Indigenous belief systems incorporate concepts of interdependence, collectivity and reciprocity. Indigenous Peoples' relationship with the land is usually spiritual and often deep-rooted, which drives resilience by promoting and reinforcing sustainable land management.

Ancestral knowledge is transmitted through oral narratives, folklore, songs and poetry, shared values and norms, and through personal experiences in diverse ecosystems.

Preserving and promoting cultural heritage is considered vital for the revitalization and continuity of indigenous languages, arts, crafts, music, dances, oral traditions and ecological knowledge.

Many indigenous cultures are based on an oral tradition. Values of reciprocity and mutual support are often integrated into local governance structures and economic practices. Cultural prohibitions established by some Indigenous Communities on activities that could harm the environment act as conservation mechanisms.



Ecological Relationship:

Indigenous Peoples often depend on their local ecosystems for almost every aspect of their well-being: food, shelter, security and livelihoods.

Their knowledge of local ecological systems and sustainable land management is reflected in their knowledge of food and agricultural systems.

Historically, they have adapted their modes of production based on their knowledge of local ecosystems and changing weather patterns, including models of rotational agriculture, use of native seeds, gathering within the forest, semi-nomadic practices, and pastoral mobility.

Collective land ownership or use in many indigenous territories drives resilience by promoting interdependence, cooperation, and mutuality within communities.

Spiritual connection and ancestral wisdom often translate into practices that promote ecosystem conservation and a deep respect for the natural world. Indigenous stewardship of ecologically significant areas, guided by spiritual beliefs and customary laws, contributes to the conservation of biodiversity, soil fertility, water resources and genetic diversity.

Loss of access to local ecosystems can be devastating to a community's survival. Indigenous knowledge is crucial to our planet and to all peoples, as it has been developed over thousands of years, offering valuable insights for ecosystem restoration and protection.



GET TO KNOW

Indigenous Peoples around the world are saving 80% of the world's biodiversity.



Successful cases of adaptation based on indigenous knowledge



Latin America

In Latin America, Indigenous Peoples have developed ingenious ways to adapt to climate variability, combining nature observation, agricultural diversification and sustainable water management.

A prominent example occurs in the Andes: the Quechua and Aymara communities of Peru and Bolivia use Andean ethnoclimatology to predict seasonal climate. Based on environmental signals - such as the intensity of the stars' brightness, certain cloud patterns or the behavior of plants and animals - they can anticipate the arrival of rainfall or the probability of heavy frosts. For example, in the Puno region of Peru, farmers determine their planting and harvesting dates by observing signs such as the flowering time of certain plants, the appearance of insects or the behavior of birds, relating them to rainfall patterns.

Similarly, the Chipaya people in the highlands of Bolivia observe the wind, snow, clouds and stars to decide which crops to plant each season and in which areas to plant them, anticipating the conditions of the year. This traditional predictive ability - transmitted by the "yatiris" or local sages - allows them to program their agricultural calendars with flexibility, planting earlier or later depending on the weather outlook, and thus minimize losses due to extreme events (such as an early frost or prolonged drought).



The ancestral strategy in the Andes is the diversification of crops and microclimates. High Andean communities plant dozens of varieties of potatoes and other tubers at different altitudinal levels, taking advantage of the microclimates of the mountains. This guarantees that, if a frost or hailstorm affects one area, a crop at another altitude will survive, ensuring food security.

Pre-Hispanic technologies are also being revalued: camellones or waru-waru, systems of raised fields interspersed with water channels, invented by Andean cultures centuries ago, have proven to better resist altiplano flooding and improve soil moisture in dry periods. In Bolivia and Peru, some of these traditional systems are being restored to cope with current climate variations.

Similarly, in Amazonian and Central American areas, Indigenous Peoples such as the Mayans have maintained the practice of milpa (polyculture of corn, beans, squash and other plants) which, as a biodiverse agricultural system, is more resilient to pests, hurricanes and droughts than commercial monocultures.

All these Latin American examples show how the combination of traditional ecological knowledge (e.g., natural indicators) and adaptive agricultural practices can be used to adapt to climate change, natural indicators) and adaptive agricultural practices (diversification, ancestral irrigation systems) allow local communities to better anticipate and resist climatic disturbances.



GET TO KNOW

The Mayan milpa, a millenary system of food production, is today an example worldwide. Learn more here:

<https://cnnespanol.cnn.com/2025/01/02/latinoamerica/milpa-maya-lla-mado-tierra-cte>



África

In Africa, Indigenous and local Peoples have also applied their knowledge to face extreme climates, particularly in arid and semi-arid regions. An emblematic case comes from the Sahel (West Africa), where farmers of the Mossi people in Burkina Faso revitalized the ancient technique of *zai* to combat desertification and drought. *Zai* consists of digging small holes or caves in degraded soil during the dry season and filling them with manure and organic waste. When the rains come, these holes concentrate water and nutrients, creating humid and fertile "pockets" where seeds can germinate even in conditions of scarce rainfall.

This traditional practice had fallen into disuse when rains were more abundant, but was taken up again in the 1980s by farmer leaders such as Yacouba Sawadogo, known as "the man who stopped the desert". Yacouba expanded the use of *zai* in his community, rehabilitating 27 hectares of degraded land by trapping what little rainfall was available and reintroducing millet and sorghum crops on previously infertile soils. The results were remarkable: in fields with *zai*, grain yields went from less than 500 kg/ha to as much as 1500 kg/ha in some cases.

In addition, the pits retained tree seeds brought by the wind and birds, facilitating natural revegetation; in a few years, tree species grew again on land where the desert was advancing.



*Yacouba Sawadogo, known as
"the man who stopped the
desert"*
Photo: Connect4Climate

This combination of ecological restoration and crop improvement has enabled Sahelian villages to increase their food security in the face of frequent droughts. Sawadogo's feat was internationally recognized (UN Champions of the Earth Award), and zaï has spread to other regions of the Sahel as an adaptation solution based on local knowledge.

In East Africa, pastoralist peoples have also applied traditional strategies to cope with climate variability. Groups such as the Maasai in Kenya and Tanzania or the Rendille in Kenya historically practice seasonal mobility of their herds and communal rangeland management: they divide land into zones of rotational use, reserving certain grazing areas for drought years and moving their animals in search of water according to inherited knowledge of existing routes and wells.

This strategy allows them to survive prolonged droughts while avoiding overexploitation of a single area. Similarly, in northern Mali, Tuareg clans such as the Tilemsi know which valleys retain residual moisture after the rains and keep them ungrazed until the dry season, ensuring a fodder refuge when the rest of the land is arid. These traditional pastoral practices, combined with the breeding of indigenous drought-resistant breeds, have been key to the resilience of these communities in the face of increasing drought and climatic uncertainty in Africa.



REMEMBER

In East Africa, pastoralist peoples have also applied traditional strategies to cope with climate variability.



Asia

In Asia, from high mountains to flood-prone deltas, examples of adaptation based on ancestral knowledge abound. In South Asia, Bangladesh - one of the countries most vulnerable to flooding and inundation - rural communities have rescued a centuries-old practice known as "baira" or floating gardens. It consists of building rafts or floating beds with interwoven layers of water hyacinth (an abundant aquatic plant) on which soil and organic matter are placed to grow vegetables.

During the monsoon season, when huge areas are flooded, these floating gardens allow vegetables such as spinach, cucumber, okra or squash to continue to be planted on the water's surface. It is an ingenious solution to flooding: the garden rises and falls with the water level, preventing the crop from being ruined. In recent years, local and international NGOs have helped to reintroduce this traditional technique in areas badly affected by heavy rains. The results show that families with floating gardens ensure food security during floods, obtaining fresh vegetables and generating surpluses to sell, even in the worst times of the year.

So much so that the FAO has recognized the floating garden system in certain regions of Bangladesh (such as Gopalganj) as a World Agricultural Heritage, for its sustainability and contribution to climate adaptation. Similarly, in mountainous regions of Asia, Indigenous Communities have adapted their practices to changes in snow and rainfall patterns. In the Himalayas of Nepal and India, local people are recovering traditional rainwater harvesting techniques and building staggered ponds to cope with the unpredictability of monsoons.



For example, in Rajasthan (northern India), Rajput villages reinstalled johads (small thousand-year-old infiltration reservoirs) to recharge aquifers and mitigate frequent droughts, combining inherited knowledge with the support of modern engineers. In coastal regions of Southeast Asia, fishing communities use knowledge passed down from their ancestors to prepare for storms and typhoons: in Vietnam, coastal farmers plant living fences of mangrove and palm trees to dissipate the energy of storm surges, while in the Philippines, some islands maintain the tradition of observing the behavior of marine animals (e.g., if albatrosses fly low, it portends bad weather) as a natural early warning system.

These Asian examples demonstrate the creativity and effectiveness of endogenous solutions: communities taking advantage of local resources (floating plants, coastal biodiversity, knowledge of rainfall patterns) to reduce their climate vulnerability, often combining the traditional with recent innovations.



Pacific

In Oceania and the Pacific Islands, Indigenous Peoples have depended on nature for their livelihoods for generations and have a wealth of adaptive practices in the face of a highly variable climate (cyclones, periodic droughts, etc.). One success story comes from the Solomon Islands (South Pacific), where indigenous coastal communities coped with erosion and sea level rise by rehabilitating a key ecosystem: mangroves. Mangroves (coastal salt tree forests) traditionally provided natural protection from storms - buffering waves, slowing coastal erosion and acting as a barrier to storm surges and sea flooding.

However, in recent decades, mangrove deforestation and sea level rise left several villages vulnerable to land loss. In response, a community project was implemented that combined traditional knowledge and new measures: stone walls were built along the coast to retain sand and sediment, reclaiming eroded soil, and then the communities themselves replanted mangroves in these restored areas, using seedlings from local nurseries.



Men, women and children participated in the reforestation, drawing on their traditional understanding of mangrove species and their cycles. Within a few years, the rehabilitated coastal stretches showed reduced erosion and a return of fish and shellfish that had declined.

This ecosystem-based adaptation effort not only physically protects villages from waves and marine intrusion, but revitalizes traditional livelihoods linked to the mangrove. The success has been such that local authorities have expressed interest in replicating these actions in other parts of the archipelago.

On islands such as Tuvalu or Tonga, traditional navigation and indigenous astronomical knowledge allow communities to anticipate cyclones or anomalous periods, adjusting their fishing and inter-island transfer activities according to signals from the sky and the sea.

The combination of natural solutions (mangrove restoration, traditional agroforestry) and cultural knowledge (traditional forecasting, resilient crops such as rain-fed taro) is helping many Pacific islands to gain time and space to adapt to the climate crisis.



Ecosystem-based adaptation not only physically protects villages from waves and marine intrusion, but also revitalizes traditional mangrove-linked livelihoods.



Arctic

In the Arctic, climate change is advancing at a rapid pace, but the Indigenous Peoples of the region - such as the Inuit (Eskimo), the Yupik of Alaska, or the Sámi of Lapland (northern Scandinavia) - have inhabited frigid environments for millennia and have developed a deep understanding of Arctic ice, climate and wildlife. Although current alterations (thinner ice, shorter winters, new species appearing and others moving) challenge the accuracy of some traditional knowledge, these communities are adapting to change by relying on their ancestral experience.

For example, Inuit hunters in northern Canada combine modern tools (snowmobiles, GPS) with their traditional knowledge of sea ice to ensure safety when hunting on unstable ice: they know how to identify by color and sound which ice is safe, and they pass that information on to youngsters to avoid accidents in unpredictable conditions. Likewise, Arctic Indigenous Peoples such as the Inuit and Sámi know traditional techniques for preserving food for winter - drying and smoking meat and fish, storing it underground or on ice - that take on new importance in the face of uncertain hunting/fishing seasons "They know the proper techniques for reserving food for winter, feeding on a wide diversity of berries, trees and grasses, and how to hunt seals and whales in colder seasons, maintaining their sustainability as they have done for millennia," says an indigenous leader from Chukotka, Russia.



This knowledge allows communities to adjust their livelihood practices even as some species migrate further north for warmer waters or certain ice travel routes are no longer safe: they diversify their diet with new species (e.g., fishing for salmon that now reach the Arctic), modify reindeer herding schedules to avoid early melt, or even recover ancient methods of building shelters for extreme weather events.

Arctic Indigenous Peoples are also contributing their knowledge to the scientific world to monitor change. In Alaska, Canada and Greenland, participatory observation programs have been established where Inuit elders report changes in animal behavior, ice formation or local weather patterns, complementing instrumental data. Although the indigenous peoples of the Arctic face enormous challenges (melting ice, food uncertainty, commercial interests), their resilience is based on the flexibility and richness of their traditional knowledge: they have lived in balance with an extreme environment for centuries, adapting their knowledge to changing conditions (natural cycles, climatic oscillations such as the Arctic El Niño) and that same adaptability is active today in the face of global warming. It is no coincidence that Arctic leaders demand to have a greater voice in decisions, because they know that "our traditional knowledge, adapted to extreme conditions, must be considered as a force to find solutions".



TIPS

Although the indigenous people of the Arctic face enormous challenges (melting ice, food uncertainty, commercial interests), their resilience is based on the flexibility and richness of their traditional knowledge.



To Make



Guide Traveler



1

My name is

Write your name or what you like to be called, draw a picture of yourself or place a photograph of yourself in the white circle.

2

My Town

Describe your community or the context in which you live.

3

Climate Change

Write down the changes you have noticed in the climate of your territory in recent years.

4

Effects on your community

Write about how climate change affects your life or that of your community.



Los Pastos

2 My people



1 My name is

Maria Chingual

3 Climate
change

In my territory, which is located in the Andean zone, I have noticed that the rains no longer follow the calendar we used to know. We used to know that in March and April it would rain heavily, and now it sometimes rains in July or September, when there should already be sunshine for the harvest.



What changes have you noticed in the climate of your territory in recent years?

How has it affected your life or that of your community?

In my community, climate change has affected food security in particular. We can no longer plant as we used to because the rains come late or at the wrong time, and that damages the crops.

4 Effects on your
community



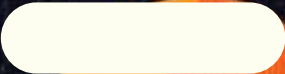
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Guide Traveler

1 My name is



2 My people



3 Climate
change

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