Harmonizing indigenous and local knowledge:

"The path towards community and institutional resilience"

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"We, the indigenous peoples, do not reject adapting to climate change because we have always, as a people–consulted Nature. We read its signs and foresee; we understand; we harmonize with it which is how we have always lived and survived through the ages, because we are blessed by our actions."

Pablo Ramón Vanegas, member of the indigenous community and technical liaison for the municipal government in San Lucas for PfR

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Introduction

The expanded story of the Chorotegas[2] and their interaction with their environment is an interesting case for community resilience strengthening through the harmonization of local indigenous knowledge[3] on the topics of Disaster Risk Reduction (DRR), Climate Change Adaptation (CCA), and Ecosystem Management and Restoration (EMR); it is a complex and ancient knowledge system that encompasses their spirituality and world view[4] .

The San Lucas and San José de Cusmapa indigenous territories, and the Las Sabanas and Somoto municipalities, located in the north-western part of the Madriz department in Nicaragua coexist in integral harmony with their knowledge and practices on DRR, CCA, and EMR topics, which are being implemented using actions developed by government and non-governmental entities to seek community development, that give way to a series of transformations that are deemed necessary to reach satisfactory harmonization of all this knowledge.

In these municipalities there is a loss of cultural identity by the indigenous peoples in the way in which they manage and administrate their livelihoods, placing ecosystem harmonization at risk and increasing the hazards, making them vulnerable to climate variability and climate change.

Despite their beliefs and traditions regarding their relationship with the Earth, indigenous peoples sometimes adopt bad practices in the way they manage natural resources, e.g. burning forests, excessive use of agrochemicals, felling of what is left of the forest (as in the case of the protected area in Tepesomoto, La Patasta).

[1]Care Nicaragua
[2]The original people found in North Nicaragua in the municipalities of San Lucas, Las Sabanas, San José de Cusmapa and Somoto have their own territorial and organizational identity.
[3]It is an integrated set of knowledge and experience from cultures, based on our experience and on the permanent human/nature and divinity interaction process.
[4]A set of opinions and beliefs that constitute the image or general concept of the world held by a person, time or culture and from which the person interprets his/her own nature and that of everything that exists.

For this reason, Partners for Resilience in Nicaragua (PfR, in English[5]) facilitates knowledge management processes, with special emphasis on the knowledge of indigenous peoples, rescuing ancestral knowledge, especially related to livelihoods that are solidly based on experiments with successful results in the different zones and ecosystems in which they coexist.

Throughout the territory in which PfR is active, people are using seeds that are not suitable for their agro ecological conditions –monoculture and other inappropriate practices. They are unaware of the signs from nature for planting. Crops are lost due to incorrect grain and seed storage; they add even more pressure to ecosystems given insufficient food or nutritional resources, setting them up to vulnerable conditions before climate variability effects.

Rescuing and harmonizing the experience

PfR has based its intervention with indigenous knowledge and community resilience in five sequential steps:

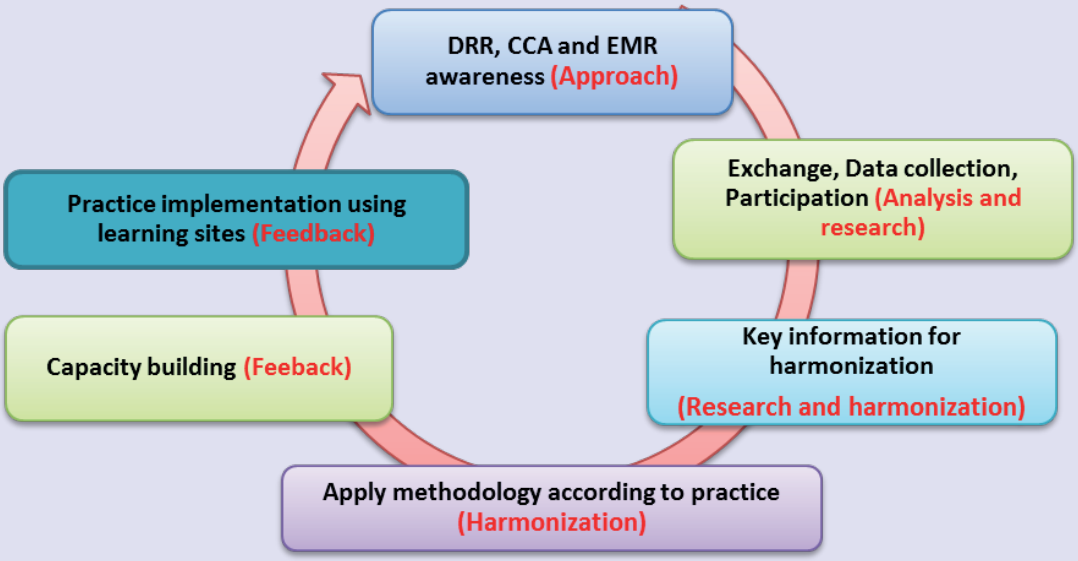

Figure 1. PfR Methodology Moments Employed

Harmonization is taken as a reference for the mutual learning process, where the involved institutions and organizations take ownership of the subject and include it in their plans, programs, projects, and their daily work. Just as each of their contexts is different, so is their harmonization process. This process was designed during planning based on the actions in the following:

PfR actions to foster the harmonization of indigenous and local knowledge

- Workshops on natural medicine and alternative food with indigenous women
- Interpretation of alert and reaction signals before the occurence of extreme events, with men and women producers, in order to better forecast local weather, adjust agricultural practices, and reduce disaster risk.
- Recovery process of bio-indicators, (signs given by the environment, which can help forecast the weather), and learning-by-doing training for farmers.
- Teach men and women farmers about conservation methods for autochthonous species and selection of creole seeds.
- Inventory of Best Indigenous and Traditional Practices for crop and pest management.

[5]The partnership includes CARE Nicaragua, the Human Promotion Institute (INPRHU-Somoto), the Madriz Municipality Association (AMMA), the Nicaraguan Red Cross (NRC) and Wetlands International.

These actions generated a knowledge and learning dynamic that provided feedback for the harmonisation process in the creation and implementation of micro projects, farm plans, systems for seed banks, exchange of community experiences, and training workshops among others.

In 2013, PfR began the harmonisation process with the presentation of the Strategic Plan by the Follow-up Commission[6] before the board of directors of the Chorotega Indigenous People Committee (CPICH) with the video "Concepts of the Integrating Approach (DRR/CCA/EMR)".

"Here the indigenous council has made sure that the DRR and CCA topics are approached from practice by indigenous peoples; from their daily lives, from their beginning, from our own, with our own influence and have been able to achieve spaces in municipal administration positions for the 2013-2016 period, holding the mayoral chair of San Lucas and San José de Cusmapa with our two ex-presidents and current female mayors."

Reyna Isabel Galeano, current president of the current board of directors of the indigenous government

PfR used the learning workshops to promote group analysis on the different signals of nature that can serve as alert signals (planting, sowing, droughts, rain), on alternative foods, and natural medicines. This information was included as part of the implementation in Learning Schools as a process to document and harmonize knowledge.

Furthermore, PfR created actions to rescue local knowledge through training, fairs, festivals, contests, and murals.

In order to disseminate the results of the recovery of this indigenous knowledge and to revalorize it, PfR reproduced information through brochures, leaflets, posters or prescription pads, in coordination with the universities and NGO's, returning the information to the participating communities.

Learning schools in the validation process of a planting system and practices integration for the adaptation to climate change, Río Arriba Community, San Lucas. Photo credit: CARE

Best Practices documented in the process

Based on the actions begun by PfR, a list of practices implemented by communities of San Lucas, San José de Cusmapa, Las Sabanas and Somoto, have been identified and documented. These were evaluated through methodological participative tools for Climate Vulnerability and Capacity Analysis (CVCA)-CVCA[7] developed by CARE NICARAGUA. Among the most relevant are:

[6]Entities that bring together the representatives from indigenous peoples in Nicaragua, CARE and PfR, 2012

[7]Methodology used as framework for dialogue in the communities, as well as between communities and other stakeholders. The results provide a solid foundation for the identification of strategies and practices to facilitate Climate Change Adaptation and Disaster Risk Reduction from a community-based approach.

Good Practice	Description	Topic		
		DRR[x]	CCA[xx]	EMR[xxx]
Rescue and conservation of creole seeds	Varieties that are resistant to floods or drought, pests and dissemination of seed banks; variety registry and organization; exchange of information and successful experiences.	×	×	×
Interpretation of nature's signals	Rains during the dry season (Indian summer, *cabañuelas* or *jocoteros*); livestock behavior; signals on the trees (leaf fall, blossoming, unnatural fruit loss) and wind oscillation, among others.	×		×
Oral knowledge transmission	This practice allows interactive oral transmission between generations on the knowledge about climate signals.	×		×
Alternative food and natural medicine	Plant classification and preparation of herbal remedies to treat different diseases; locate and collect plants; preparation methods and contraindications; prescriptions and the nutritional value of food.		×	×
Soil and water conservation works	Forest conservation on riverbanks and ravines (gallery forests); slope stabilization in areas with groundwater recharge; micro irrigation knowledge; crop diversification; build retaining dykes; use natural pesticides and biological pest control.	×	×	×
Planting methods (agro ecology)	Food is grown according to the indigenous worldview without altering the environment, e.g. backyard gardens, production in the forests.			×

Note:
DRR[x]: Disaster Risk Reduction
CCA[xx]: Climate Change Adaptation
EMR[xxx]: Ecosystem Management and Restoration

Table 1: Compilation of the good practices identified that harmonize with the integrating approach promoted by Partners for Resilience (PfR).

Through a proper environment for dialogue, practices found among decision-makers, technicians and community members were shared at different levels, with the purpose of enabling change among a new generation of men and women producers, so they start changing their unsustainable practices for current productive models and instead adopt alternative practices derived from indigenous wisdom and traditional knowledge.

Good Practices Harmonization (an example from the communities)

Fostering the use of creole seeds to adapt to climate variability in the Río Arriba Inalí River

Learning schools, agro-ecological analysis, hazards and vulnerabilities, Río Arriba Community, San Lucas. Photo credit: CARE

The Río Arriba Inalí community has 183 families (819 inhabitants). The families have always planted basic grains. It is a community that is located in the sub-watershed of the Inalí River and has the same river cutting through it. When we speak of basic grains we speak of corn, beans, sorghum and creole sorghum (millón). The community created a community seed bank 18 years ago and proper management has made it the most successful seed bank in the area today, because they have had a good management of their community group and of the crops they collect. Over time, they have also been able to give credit to partners in the group and have improved the infrastructure and the same number of partners has remained, which are more than twenty. To date, there is another seed bank that is made up of youth.

Learning how to do trials to save seeds

Another activity of the programme was the implementation of a learning school that fosters CCA, DRR, EMR through participative methodologies of learning by doing, where trials were made on the yields of creole varieties (black beans) and improved varieties ("INTA-nutritious beans"; Nicaraguan Institute for Farming Technology).

The trials were done by using the normal techniques employed by the growers. They were planted in a plot on a hillside, which is the main characteristic of the soil in this community and it is the way in which grower's plant.

PfR partners wanted to run trials on the yield of these varieties using different planting densities and the response to climate variability.

Learning school, planting seed trials per hole, Río Arriba Community, San Lucas
Photo credit: CARE

The methodology used for the trials was the following: 'Plant one grain per hole (or golpe)'. 'Plant two grains per hole'; 'Plant three grains per hole'. This was on plots of land that were 10 meters long by 1 meter wide. The hole where the seed is deposited is known as "golpe". So with this methodology, the trial allowed them to discover which type of planting achieved better results, adaptability and saved seeds. Before this experience, growers used to plant too many seeds in the planting area.

The results of the trials with black beans were the following: 3 grains had a yield of 5 pounds. Planting of 2 grains had a yield of 4 pounds and 1 grain had a yield of 1pound. Growers concluded that planting 1 or 2 grains is best. Why? They say results are better with 1 grain because they get the same results when planting 3 grains per hole.

The results of the trials with INTA-nutritious bean were the following: planting 1 grain had a yield of 2 pounds; planting 2 grains had a yield of 5 pounds; planting 3 grains had a yield of 6 pounds. Growers concluded that planting 2 grains is best. Why? They say results are the same to planting 3 grains. The difference between black beans and the INTA-nutritious beans is that the black bean is creole and native to the community whereas the INTA-nutritious bean has to be purchased.

Farmers have certain preference for the INTA-nutritious bean because it is red and it is customary to eat red beans in the community. They concluded, however, that it is advisable to plant one plot with black beans to have food readily available if drought conditions arise in their communities.

What is the lesson learned from this experience?

Producers that participated in the learning school are adopting planting the black creole beans at two beans per hole, experiencing greater seed savings with this practice, optimum yields and a seed that is tolerant to climate change. The learning school took place during the first growing period (May – August) in 2013. In the last growing period (September – December), the farmers put into practice planting two beans per hole and preferred creole seeds.

Harmonized knowledge in the Río Arriba Inalí community

Two varieties of corn were planted –Curreño yellow corn and Cusmapeño white corn—. The Curreño yellow corn produced a crop even though the weather during the growing period was dry. The Cusmapeño white corn was visibly more developed (i.e. leafier) but the harvest in grain was limited. The lesson learned is that the yellow corn that has always been planted in the community is adapted to its climate conditions whereas the other variety coming from Cusmapa is not adapted to the area.

There is an adaptation measure for creole seeds because they are seeds that have adapted to the climate conditions and reduce the risk of food insecurity. It is an example of a traditional practice that continues to be valid despite the presence of improved varieties.

Rescue and inventory of creole seeds with drought resistant characteristics, CPICH, San Lucas.
Photo credit: CARE

Sustainability of this experience is self-evident. The growers themselves are monitoring the results to guarantee the lessons learned are not wasted. They are also planting tree alley cropping –planting trees among crops– and they are implementing soil and water conservation practices. These experiences are passed orally from parents to children ensuring long-term sustainability.

Lessons learned:

Lesson 1: More indigenous knowledge and wisdom have been made visible to better prepare the communities to become resilient to climate change by harmonizing best practices. Harmonizing different types of knowledge enriches the learning process.

Lesson 2: It is necessary to strengthen the dialogue between the municipal government, State institutions, indigenous people governments and NGOs. PfR partners have been able to facilitate integral development processes, and change processes.

Lesson 3: Boards of directors are successful in their organizational and election processes when men and women leaders share the validity of their demands, when they are willing to serve and help, and when –from the onset– they have the best interest of the community in mind, as well as the will to promote and lobby before the participating institutions and communities.

Lesson 4: It is possible to grant legal and political recognition to indigenous knowledge and wisdom with the creation of strategies based on local agreements and if they are included in the existing plans and local agenda for DRR, CCA and biological diversity.

Lesson 5: The recovery and harmonization facilitation process by PfR partners and other stakeholders is a valuable example of collaborative work to stimulate learning, promote institutional resilience and integrate disciplines.

Main Challenges

Not everything has been said and done; a long and arduous road has been covered, but challenges remain:

- It is necessary to promote and to continue rescuing best practices to implement and to continue complementing tradicional, local and indigenous knowledge with scientific information.
- Continue coordinating spaces for dialogue among decision-makers, technicians and community members so that each stakeholder can improve their resilience capacities regarding climate change and climate variability, in a constant feedback process.
- Improve visualization and observation capacities on climate variability and climate change to allow the population to anticipate these events and improve their response capabilities.
- Motivate government and non-government entities, research centers, universities to further expand the validation of the best practices rescued from the indigenous and local knowledge harmonization process to raise awareness in public and private stakeholders on the importance and intrinsic value of this resource to include it in institutional plans, programs and projects.

Opportunities

- Involve the youth in the indigenous knowledge recovery and harmonization processes, encouraging generational transmission of this wisdom, strengthening their identity.

- Indigenous communities are more open to sharing and exchanging their knowledge on and for the sustainable management of their livelihoods and ecosystems.

- The perception and identification of hazards and vulnerabilities drives communities to implement indigenous and local knowledge to strengthen their community's resilience.

- Disseminate and promote systematized and tried best practices from the schools of learning in neighboring areas to help other communities and municipalities adopt these practices in order to improve their resilience capabilities to climate change and climate variability.

Conclusions

The collaborative effort of PfR partners in the process to rescue and harmonize indigenous knowledge has helped prove that said wisdom is related to the Watershed Management Plans, Climate Change Adaptation Strategies, Social Micro Projects and Community Action Plans.

Ancient wisdom and collective knowledge have a necessary link to resource management in the areas where research processes can be looked into more in depth in order to allow them to better take advantage of this information.

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