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"ENHANCING THE QUALITY OF PEOPLES' LIVES"



A CASE STUDY

Building Adaptive Capacity and Resilience to Climate Change in Toledo, Southern Belize

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INTRODUCTION



Community members of Poite in Belize participate in a focus group on livelihoods for case study

Agriculture is the principal source of income for many rural communities in Southern Belize and so the effects of climate change may have serious implications for current livelihoods there. To effectively respond to increased climate risks, transformational change is necessary and with the support of the Caribbean Disaster Risk Reduction Fund (CDRRF) which is funded by the Caribbean Development Bank, the Farmers' Club model has proven to be useful in promoting behaviour change while expanding the reach of adaptation interventions. Notably, the relationship between human systems and the physical environment can help the agriculture sector to become more resilient, especially where local community vulnerability resilience and ability to cope with climate hazards is assessed (IPCC 2014).

This case study highlights climate change adaptation strategies employed by communities in Toledo District, Southern Belize. Key to the success of these strategies is an emphasis on gender's role in building resilience, contributing to poverty reduction and driving transformational change in vulnerable rural communities. Group engagement strategies such as the Farmer's club model and the "Pass On" loan system has helped to secure the livelihoods of a larger group of beneficiaries.

BACKGROUND



A group of participants work on their Livelihood Baseline Assessment profile in Belize

Toledo features rainforests, coastal lowland plains, extensive cave networks, and offshore cays. The area is also rich in culture, with inhabitants of Mopan and Kekchi Maya, Creole, Garifuna, East Indian, Mennonite, and Mestizos descent. However, faced with rural poverty rates reaching 55% in 2009 as compared to 28% in urban areas, Toledo, a rural district, has been noted as the poorest in Belize with indigence being almost four times higher than the national average (Belize's 2009 Country Poverty Assessment (CPA)). This is attributed to low education levels, poor infrastructure and low resilience capacity. Gender inequality challenges also persist and are maintained based on traditional Mayan practices which do not value high school education for girls and encourages marriage at a young age. Consequently, only 25.9% of females participate in the workforce in Toledo, compared to 82.2% of males (Huggins and Baksh and Associates, 2016).

While the main occupation in Toledo is small-scale subsistence agriculture, many have shifted to fixed income opportunities such as working on plantations that produce crops for the export market. There are additional myriad of issues that affect the people of Toledo, including population increases, the decline in the traditional "milpa" (corn) farming system, inability to access credit from traditional financial institutions, inappropriate agricultural practices which lead to soil erosion; climate change and variability.

Toledo's social, physical, and environmental characteristics also makes it highly vulnerable to

natural hazards and climate risks. In fact, a 2016 World Bank report notes that Belize is one of the countries most affected by weather-related events and other natural hazards (World Bank, 2016). Due to this, crops and livestock have been destroyed due to heavy winds, intense rainfall, flooding, droughts, and bush fires. Soil erosion, weeds, pests, and diseases have all negatively affected crop yields. While climate change is expected to increase the frequency and intensity of weather-related events, strengthening Belize’s resilience to natural disasters is therefore critical to protecting livelihoods and ending poverty.

The Project

Humana People to People Belize (HPPB), is a local non-governmental organisation In 2017 they designed a project aimed at building adaptive capacity and resilience to climate change in eleven communities in the Toledo District. This project applied the Farmer’s Club (FC) model (see fig 1) previously used by Humana People to People in Africa, Asia and Latin America. It was adapted to the Toledo context in order to promote the production of local food through the organisation of farmers into crop groups.

The project had 3 main objectives:

1. Improved physical infrastructure and early warning systems for reduced risk to natural hazards,
2. Improved agricultural farming systems resilient to climate change impacts using the Farmers’ Club (FC) Model, and
3. Improved awareness and capabilities of the project communities in climate change adaptation and disaster risk reduction (DRR).

Through the FC model, cooperative groups helped small farmers to join forces and improve their agricultural productivity. The farmers focused on growing coffee, cacao, pineapples and Moringa. Noting the gender inequality issues, an all-female FC was created to empower women.



FIGURE 1: Farmers Club Model used by Human People to People, Belize.

PROJECT OUTCOMES

Under the project, there were several positive outcomes and beneficiaries.

To improve the physical infrastructure and early warning systems, two emergency shelters were rehabilitated, one in Bladen and one in Blue Creek. Two river gauges were installed in flood-prone areas to address the issue of flooding. Fifteen community-based river monitors and rain gauge readers were also trained to build capacity. Additionally, two-way radio systems were used in each of the target communities to enhance communication with the National Emergency Management Organization (NEMO) and other remote communities during natural hazards events. Fifteen community-based river monitors and rain gauge readers have been trained (Figure 3) and 2 earthen drains approximately 4,390 meters long will be constructed.

Directly, 180 farmers (20 women and 160 men), 22 river keepers, five radio operators and 77 Village Emergency Committees (VECs) / Community Disaster Response Team (CDRT) members benefited under the project. Indirectly, the project benefited approximately 8,000 residents (4,160 females and 3,840 males) across the 11 villages in the Toledo District.

Uniquely, through nine farmers clubs, the FC model has been successful in promoting climate smart agriculture. In addition to the 0.2 hectares demonstration plot and a greenhouse for growing vegetables (Figure 4), each FC received training and additional equipment. FC members were trained to build climate resilient pig pens and chicken coops, and water catchments. They also received two solar dryers, which serve all nine FCs and every FC member received metal post-harvest grain storage silos for the storage of corn or beans.

FC members also participate in the “pass on” loan system where the first offspring of animals is jointly decided on then distributed to club members.

To enhance community awareness on climate change and Disaster Risk Reduction, community billboards, clean-ups, school activities (Figure 6), movie nights and newsletters were utilised.

OVERCOMING CHALLENGES

Despite its achievements, the project faced some initial challenges around governance and trust. Governance issues arose based on strained relationships between different local governance authorities—the Toledo District Village Council and the Alcaldes in the Maya communities. There was also distrust based on negative experiences with previous donors/development organisations. Through effective community engagement, the project team was able to raise awareness and participation in the project.

CHANGE/IMPACT

The FC initiative propelled members to duplicate the training they received in climate-smart construction in several areas. Without project related guidance, FC members in Bladen, Blue Creek, Jordan, Indian Creek and Trio took the initiative and built second pig pens. FC members in Corazon also built additional chicken coops while the Bladen FC members relocated their greenhouse. Each FC has also harvested vegetables and has been utilising skills such as composting in their home gardens and demonstration plots. They have also retained feed substitution skills and continue using bananas and cassava as alternative feed for their pigs.

Trained project members have also utilised the two-way radio system in March 2019 to communicate with NEMO regarding flooding in Toledo.

Overall, the climate change awareness and disaster risk reduction efforts have been paying off. A recent Livelihood Survey Workshop shows that both adults and school children aged 5-12 years can explain what climate change and DRR means. There has also been a decline in the amount of garbage that is being improperly disposed of by residents.



Community members were trained to build water catchments under the project

ANALYSIS

In the short term, the project has achieved many positive results. Generally, it has increased awareness of DRR and climate change and increased resilience and the adaptive capacity of the Toledo District. The farmers club model has also promoted climate smart, environmentally friendly agriculture in livestock and crop production. The FCs have also provided a source of encouragement, information sharing and joint incentive for farmers. The use of alternative feed and composing has also reduced expenses for farmers thus increasing their take home income from agriculture production.

The two-way radio systems have already improved communication services in relation to an emergencies. Noting the need for ongoing maintenance by accessible skilled technicians, the systems have been handed over to the National Meteorological Service of Belize, the Hydrology Unit - Ministry of Natural Resources and the National Emergency Management Organisation (NEMO).

The “Pass on” Loan livestock programme is also a standout as it provides FC members with an opportunity to consume, slaughter and generate an income or raise their own livestock from the initial livestock offered by the FC. This ‘loan’ contributes to their food security and can be replicated by other projects.

The successes gained from the female only FC is also worth noting as it provides women with a chance to support each other in the agriculture sector where they are very underrepresented. The Female farmers club also provided the opportunity for contributing income to their households. This gender sensitive approach to climate smart agriculture also helps to reduce poverty in vulnerable communities with gender inequality prevalence. The female FC has also generated interest in other districts to start similar clubs.

With the encouraging results to date, HPPB secured grant funding for a community outreach assistant to continue to engage over a 12-month period. To determine long term successes, long-term monitoring and data on how the project has impacted household income will be required.

LESSONS AND RECOMMENDATIONS

To build on the successes of the project to date, reinforcement of concepts such as Climate change and DRR should be ongoing. It is also recommended that the concepts be included in the education system at different levels and students be given field visits to demonstration farms. There is also a need to empower women more via a multifaceted approach which can include gender sensitisation training to shift existing cultural norms as well as considerations around availability of employment opportunities and the provision of adequate childcare.

Project Video: <https://www.youtube.com/watch?v=AUOred9sqEE>



Climate resilience farming and livelihoods are a key part of the project

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