

Canada



## A CASE STUDY

Building Climate Change Resilience  
and Reducing Disaster Risk  
in Peckham, and Surrounding  
Communities, Clarendon, Jamaica

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*Diversion ditch - one of the methods used by farmers to reduce flooding risk.*

## INTRODUCTION

In Jamaica, agriculture contributes 7.3 percent to Gross Domestic Product (GDP) but employs 19 percent of the population (Planning Institute of Jamaica 2018).

Over the last two decades, weather-related disasters, including those due to droughts, floods, tropical storms and hurricanes, have severely impacted economic growth and livelihoods across the island. The total cost of the combined impacts of several storms and hurricanes (including associated severe flooding damage, loss of lives, destruction of goods and services in the past decade has amounted to over USD129 billion) (Climate Studies Group, Mona, 2012). The general scientific consensus is that the Caribbean region is experiencing a more variable climate of stronger dry season droughts (Herrera & Ault, 2017) and more stormy wet season conditions (Taylor et al. 2018) which has profound implications for all sectors of Jamaican society.

Jamaica's agriculture plays a particularly important role in income growth and poverty reduction, rural development, ecosystem resilience, biodiversity conservation, and food security. Climate variability and extreme climate events have a strong influence on Jamaica's agriculture sector (Gamble et al. 2017; Campbell et al. 2010). Increasing pressure on farmland, small-holding size, and climate-related extreme events have resulted in devastating losses of agricultural crops and erosion of farmlands. Since land use in most parishes remains mainly agricultural, events of flooding and landslides affect agriculture-based livelihood activities and also contribute greatly to agricultural loss. Changes in precipitation, higher temperatures and extreme weather all pose serious risks to the agricultural sector. It is within this context that this case study synthesises the results of the project, "Building Resilience and Adaptation to Climate Change while Reducing Disaster Risk in Peckham, Clarendon and Surrounding Communities". The project is being implemented by the Environmental Health Foundation (EHF) and funded by the Community Disaster Risk Reduction Fund which is

managed by the Caribbean Development Bank (CDB). This case study recognises the project's achievements and impacts on the community and offers some lessons learned and recommendations for how future initiatives aimed at building resilience within communities can expand on the work completed. This case study also highlights how strong community buy-in can maximise project outcomes – a key ingredient for transformational change.

## THE SITUATION

### *Background*

Situated in the northern part of Clarendon Parish, Peckham is a composite of four districts, with a small population of just over 900 people (EHF, 2018). The project targeted the community of Peckham, as well as the surrounding districts of Johns Hall, Morgans Forest, Grantham, Sanguinetti, Frankfield, Silent Hill and Top Alston, which together have an estimated population of 3,200 persons (EHF 2018). According to a 2019 report by the Planning and Statistical Institutes of Jamaica, the incidence of poverty in Peckham is 25% and is even higher in nearby Johns Hall (39%) and Grantham (35%). Much of the land in Clarendon is used for agriculture and most of the island's tobacco is also grown in the area, along with cotton, allspice, ginger, livestock, bananas, coffee, and cocoa. Residents in Peckham and its surrounding communities are highly dependent on agriculture and there is limited availability of alternative livelihoods. The EHF (2018) notes that farmers in the area have been impacted by deforestation, land slippage, bush fires, drought, hurricanes and soil erosion. In particular, intense, intermittent rainfall coupled with the impacts of drought has severely reduced yield and diversification of crops, and exposure to diseases which in turn has threatened livelihoods. These problems have been compounded by poor environmental practices such as slash and burn and charcoal burning.

### *The Project*

Given the challenges faced by Peckham and its nearby communities, the EHF launched a two-year project in early 2018 to strengthen the resilience of communities and farming systems to climate change,

building on the priorities, knowledge and capacities of local people. The intended outcomes of this project include: (1) enhanced food security and livelihoods through the establishment of an aquaponics system powered by renewable energy, (2) improved land and water management, (3) preparation of hazard maps and completion of vulnerability assessment and disaster risk reduction (DRR) strategies for the community, and (4) increased public awareness about climate change impacts.

To date, the project has made major strides in building capacity for improved land management. Forty training sessions have been held so far and attended by approximately 400 farmers from eight Farmers' Groups. Very lengthy sentence. Please consider splitting, perhaps as follows: These sessions highlighted improper agricultural practices and introduced sustainable farming practices specific to the target communities. Training topics included small-scale poultry management (including climate-smart livestock production and housing structures) food safety principles, establishment of sweet potato demonstration and replication plots, small business/farm planning strategies, ginger treatment and fertilizer management, land husbandry, post-harvest practices and marketing strategies. The Tweedside Farmers' Group also received training in good governance and financial management to strengthen their institutional capacity.

An assessment of the local farming conditions revealed an urgent need to address poultry management challenges. As a result, two livestock feed companies were asked to deliver training in small-scale poultry management to farmers in the target communities. To complement this training, the project also plans to upgrade the physical infrastructure of selected poultry farms to make them more resilient to climate-related impacts. Small-scale poultry producers in Jamaica are highly vulnerable to the impacts of climate variability and climate change; these farmers account for 30- 35% of national production and experience some of the worst damage during the passage of hurricanes (Selvaraju et al., 2013).

Another major achievement under the project has been the establishment of demonstration farm plots to help promote good agricultural techniques and climate smart agriculture. Farmers were provided with the agricultural inputs needed to establish their plots. One

sweet potato demonstration plot and 24 replication plots have been established under the project. The “Uplifter” sweet potato variety was introduced by the project and it is being grown on some of these plots as it is considered climate resilient owing to its ability to survive drought conditions and protect the soil from erosion. Demonstration plots have also been established for ginger, the production of which has declined in Jamaica due to the rhizome rot disease. These plots are being used to try different methods of controlling the disease. Finally, pineapple is also being grown on demonstration plots, to be used as a barrier crop to reduce soil erosion as well as provide an additional source of income for the farmers. One such demonstration plot and 40 replication plots have already been established. The farmers have been very receptive to the introduction of the new crops in order to diversify their products and adapt to climate change.

A number of activities have taken place to help communities reduce their risk from natural disasters and increase their awareness to climate change. The Office of Disaster Preparedness and Emergency Management (ODPEM) and the Disaster Unit in the Clarendon Municipal Corporation were engaged to work with community representatives to



*Under the EHF project farmers in eight communities are exploring climate smart crops.*

develop Community Adaptation Plans (CAPs). Over 60 community representatives from more than 15 community organisations have been participating in the development of these plans for their communities. The plans will also include relevant DRR activities and hazard maps. In addition, community members received DRR training in Initial Damage Assessment, Shelter Management, First Aid and Light Search and Rescue. The participants will form part of the now developed community emergency response teams (CERT). Trained participants selected their respective executive CERT members who are responsible for addressing the disaster response needs of their communities and providing the necessary support to ODPEM and the Disaster Unit in the municipal corporation.

There are several other significant project activities which are still in progress. These activities include the installation of rainwater harvesting tanks for 200 farmers, the enhancement of one emergency shelter, procurement of the Revofarm mobile phone application for farmers, the establishment of five pilot aquaponics systems and public awareness activities related to climate change impacts and disaster risk reduction.

## ANALYSIS

For the majority of project beneficiaries, farming is their main source of income. As such, the diversification and adaptation of their agricultural practices will help to ensure that their livelihoods are sustained and enhanced within the context of climate variability and climate change. The establishment of replication plots in particular, is one tangible benefit already realised through the project which will significantly contribute to supporting livelihoods. The “Uplifter” sweet potato is an attractive variety for export markets and has the potential to earn more money for farmers and reduce their crop losses during drought. The practical training received by farmers will be put to use on their plots right away, facilitating the retention of information provided by the training. It is likely that this aspect of the project will have a positive impact on the lives of the farmers over the long-term.

Another significant change which has already been realised is the establishment of trained Community Emergency Response Teams. With these groups, community members now have the skills to act as first responders and to help each other while they wait for additional emergency assistance in the event of a natural disaster. In the long-term, this will help to reduce loss of life during extreme weather events. To ensure that this capacity is maintained, training may need to be provided to community members regularly and reviewed after extreme events. Similarly, the CAP, inclusive of any hazard maps and DRR information, will need to be updated periodically, depending on the changing context of the community's development and particularly after extreme weather events which affect the community.

EHF has highlighted two factors that have led to a high level of community participation and ownership from the outset of the project, and contributed to the success of the initiatives. Firstly, the EHF conducted several community sensitisation meetings at the outset of the project, in addition to administering the Caribbean Development Bank's Community Engagement Survey. These efforts allowed the Project Management Team (PMT) to engage with key stakeholders from each target community very early, building trust and rapport, thereby increasing the level of community participation and fostering a sense of ownership. The Project Extension Officer (PEO) has carried out over 400 farm visits (including repeat visits) since the start of the project and they have contributed to a high-level of engagement with the farmers which has been sustained during the implementation of the the project (not just at the beginning). Secondly, the EHF consulted and collaborated with the Member of Parliament (MP) and other key political authorities and stakeholders in the target communities. This political support was instrumental in mobilising participants in the concept stage of the project, thus contributing to the communities' buy-in.

Other factors which may have contributed to the success of the project are farmers' experiences with the negative impacts of climate variability and extreme weather events. In 2008, Tropical Storm Gustave caused devastating damage to Jamaica's agriculture sector. A report by the Inter-American Institute for Cooperation on Agriculture (IICA) (2017) notes that Clarendon had the highest number of affected farmers, and sustained damages estimated at JMD12.83 million.

Similarly, with the passage of Tropical Storm Nicole in 2010 and the associated week-long intense rainfall, Clarendon suffered the second highest damage in the agriculture sector (over JMD80 million), surpassed only by St. Elizabeth in the southwest of the island (Selvaraju et al., 2013). Periods of drought have also been common in Jamaica in the last decade and have seriously impacted farmers. Drought conditions in 2010 caused a 10 – 30% reduction in crop yield in Clarendon (IICA, 2017). As a result of all these events, farmers in the project area were likely to have felt a keener need for the project interventions and were more willing to buy into project activities due to their personal experience.

There are two ongoing project activities that have the potential to have a very positive impact on the target communities provided that some considerations are taken into account. The first of these is the provision of the Revofarm mobile phone application to farmers. This application will give farmers real-time access to agronomic and weather data, to help them to make better planning decisions, reduce losses and maximise profits. While use of the application could be a significant advantage, care should be taken when selecting the individuals who will receive this application, as behavioural norms related to phone use amongst farmers may limit the impact. For instance, if farmers are not accustomed to or comfortable using cell phones beyond their basic calling capabilities, they may not use the app enough to maximise its potential.

The second intervention is the purchase and set-up of aquaponics systems. Aquaponics is a sustainable, intensive food production system which could support and enhance livelihoods and reduce poverty through the increased income earned from the sale of vegetables and fish and also the additional food source for the farmer's family. The project plans to establish five small-scale pilot aquaponics systems, however such systems at the individual farm level may be inaccessible to many farmers due to the start-up costs involved. In order for the adoption of this technology to be widespread enough to be truly transformational, farmers will need financial support for the initial investment, particularly as output and associated income may not be maximised at the outset when the farmer is first learning how to manage the system.

## LESSONS AND RECOMMENDATIONS

Strong community buy-in is critical to the ongoing achievements of the EHF project. These sessions highlighted improper agricultural practices and introduced sustainable farming practices specific to the target communities. Training topics included small-scale poultry management (including climate-smart livestock production and housing structures) food safety principles, establishment of sweet potato demonstration and replication plots, small business/farm planning strategies, ginger treatment and fertilizer management, land husbandry, post-harvest practices and marketing strategies. Future projects targeted at these communities should invest a similar level of effort in maintaining frequent engagement with community members and also reach out to relevant political actors who may be able to rally support for project activities.

Building resilience among individuals and communities takes time. To ensure that the skills and knowledge gained through this project are retained in the long run, it may be necessary to provide periodic retraining to community members or one-on-one support to individual farmers. This project and future projects should ensure that persons involved have access to the relevant resources and information, and engage with knowledgeable actors either through partnering government agencies or civil society groups, to help reinforce best practices over the long run.

## OTHER

Project website: <https://www.ehfjamaica.com/categories/featured-projects/building-resilience-adaptation-to-climate-change-while-reducing-disaster-risk-in-peckham-clarendon-surrounding-communities>

### Project Posters



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