



INNOVATION FUND

Bluefields Climate Smart and Resilient Settlement (BCSRS)

Parent project: *Harnessing Innovative Technologies to Support Resilient Settlements on the Coastal Zones of the Caribbean (HIT RESET Caribbean)*

PROJECT COORDINATOR

Spatial Innovision Limited, Jamaica

LOCATION

Jamaica

PERIOD

April 2023 - October 2024

EU FUNDING

EUR 400,000

SECTOR

Urban development

KEYWORDS

Climate change, natural hazards, coastal settlements, environmental research, community assessment, digital technologies, digital twin, geo-design

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CHALLENGE

Climate change has been producing alterations in the way in which human settlements interact with the natural environment. The rise in sea level, the greater intensity of hurricanes, flooding, tropical storms, heavy rains, landslides, earthquakes, and a longer duration of the dry season compared to the wet season, causing damage to homes and infrastructure, are phenomena that directly affect the coastal communities of the Caribbean. The economic and marine activities are also disrupted by both natural and man-made hazards, depleting the marine fish stocks, and causing a decline in fish habitats, environmental degradation and increased pollution levels. The community of Bluefields is a typical small coastal settlement located in the parish of Westmoreland, southwest Jamaica. Being a coastal fishing community, it is susceptible to natural hazards and the impacts of climate change.

PERSPECTIVES

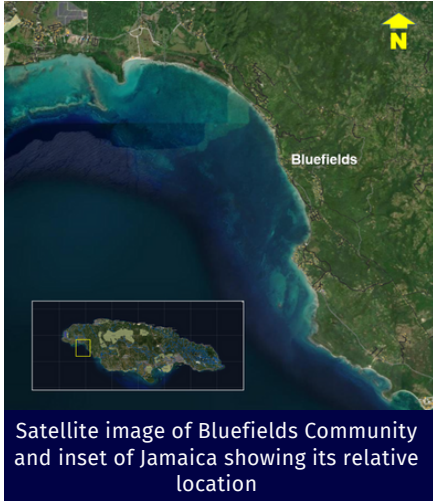
In accordance with 'The New Urban Agenda' (NUA), endorsed by the UN in 2016, the project facilitates the sustainable management of Bluefields Community that is extremely vulnerable to the adverse effects of climate change by supporting the development of disaster risk reduction strategies through urban planning policies, applying innovative collaborative GIS models. The NUA sets a new global standard for sustainable urban development, promoting equitable, prosperous, and sustainable cities and human settlements. As a signatory to this agreement, Jamaica is committed to implementing these principles in its urban development strategies, aiming to create more sustainable, resilient and inclusive cities for its citizens.

With the development by the project of a digital platform, residents, government entities, local enterprises, environmental agencies and schools will know how to improve the resilience of the community to natural disasters and climate change. An improved spatial planning process of a coastal settlement will be evident through the community, government entities, local enterprises, environmental agencies and schools using the digital twin model for integrated coastal zone management in Bluefields Community.

JUSTIFICATION

It is essential to be aware and take the necessary precaution to minimise and overcome the effects of climate change in the Caribbean. Many lives have been lost in the region as a result of the devastating effects of climate change and natural hazards. Citizens and governments have searched for solutions to combat the effects of climate change, but not enough. It is very critical to build resilience in vulnerable communities by developing a community / settlement risk management platform to enable, promote and validate the integration of government entities, coastal development agencies, academia, coastal communities and community leadership stakeholders for informed policies and plans that are conducive to the use of digital and modelling innovations for sustainable coastal development. The project will also design and build a digital twin with geo-design modelling technology to be used by development and planning agencies, private institutions and citizens of Bluefields to analyse, predict and respond to the current and future impacts of climate change and natural disasters, and plan and manage coastal communities.





METHOD

A comprehensive baseline study will inform stakeholders and additional information from them will be acquired in workshops, followed by the design and development of both the digital twin platform and a system of engagement of the community. Updating and testing of the new digital and modelling innovation will be necessary to ensure it works as planned.

The next step is to develop policy recommendations for improving national, legal and policy frameworks. Training workshops with development and planning agencies and citizens of Bluefields will ensure that these entities are able to utilise the new technology. A public-private partnership will be created to sustain and manage the digital twin model created.



HIT RESET is implemented by UWI in partnership with CDEMA and AdeKUS. **HIT RESET** provides support for projects that develop innovations to increase resilience in coastal communities of the Caribbean and strengthens institutions', national and local governments' ability to leverage information and knowledge for policy amendments.

HIT RESET supports 9 projects implemented in Barbados, Dominican Republic, Jamaica, Saint-Lucia, and Trinidad & Tobago that focus on:

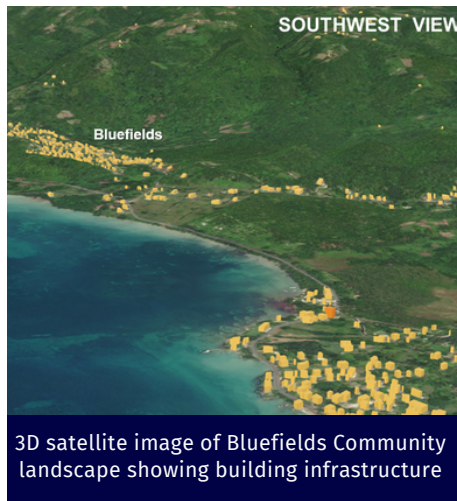
- Digital and modelling technologies utilised by coastal development agencies and high-level decision makers in CARIFORUM countries to predict the impacts of climate change and natural disasters, and to plan and manage coastal communities.
- Government entities, coastal development agencies and coastal communities in CARIFORUM countries developing urban planning policies and/or plans that are conducive to the use of digital and modelling innovations for sustainable coastal development.



INNOVATIVENESS

Digital twins are the newest resources for regional and urban / community planning and management. Under the geo-design modelling approach, digital twins facilitate spatial analysis and decisions on human activities considering their suitability to the geographical context.

They are comprehensive platforms that integrate three-dimensional (3D) modelling of physical forms of cities and their territory, as well as the behaviour of the human and natural systems that coexist in them.



3D satellite image of Bluefields Community landscape showing building infrastructure



Bluefields: districts and communities surrounding the bay, some located along the water, others located in the steep hillsides

EXPECTED RESULTS

Impact

- Improved spatial planning process of coastal settlement in South-West Jamaica adapted to climate change impacts.

Outcome

- Community, government entities, local enterprises, environmental agencies and schools using the digital twin model for integrated coastal zone management in Bluefields Community.

Outputs

- Community, government entities, local enterprises, environmental agencies and schools enabled to use the digital twin model.
- Public-private partnership created to sustain, replicate and manage the digital twin model.



Historic sites in Bluefields