

Building Caribbean GeoNode Platform in Support of Climate Risk Management

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GFDRR
Global Facility for Disaster Reduction and Recovery



Cooperative Governance
Traditional Affairs



ISDR



Our Highly Vulnerable Region

- Housing developments on drainage channels and steep slopes
- Unapproved development and land squatting
- Voluntary approach to the use of building codes
- Active seismic activities with geological faults
- Higher incidence and intensity of hurricane storms
- Low level of awareness on the impact of natural hazards
- Low level of real estate insurance
- Inadequate access to resources – social infrastructure, education, public awareness.
- Fragile economies

Climate Change Impact in the Caribbean

- **Sea-level rise**
- **Warmer temperatures**
- **More frequent and damaging storms**
- **Increase in coastal flooding.**
- **Higher rates of coastal erosion.**
- **Submergence of coastal wetlands, which in turn may lead to the loss of important coastal habitats of birds, fish and other wildlife.**
- **Saltwater intrusion and increased salinity of estuaries and aquifers, compromising the critical water supply.**

Our Needs

- To reduce the risks related to adverse effects of climate change in the Caribbean.
- To improve evidence-based decision-making on landuse planning, developmental activities, and emergency management that would mitigate climate-related risk.

Our Challenges

- **Lack of detailed, current, and historic climate and hydrological data.**
- **Poor level of access to existing data due mainly to proprietary data policies, technological limitations, lack of meta-data policies and capacity.**
- **Inadequate infrastructure for data management**
- **Poor transparency in governance through public participation**
- **Disparity in national approaches and competence in addressing regional issue**
- **Inadequate political support for data management**

Key Policy Questions for Climate Change Foresighting

- What has changed since...? (Trend)
- What spatial patterns exist? (Patterns)
- What are the drivers of change? (Cause-effect analysis)
- What if...? (Modeling)

Data Management Infrastructure in the Caribbean

The Strengths

- Friendly and corporative GIS personnel
- Healthy informal data sharing among personnel in agencies
- Keen interest in GIS development
- Willingness to learn and incorporate good ideas
- Relatively small size of land mass

Data Management Infrastructure in the Caribbean

The Weaknesses

- Data duplication and multiple map projection systems
- Lack of a consistent data collection programme.
- Lack of current & accurate data on vegetation & landuse data
- Little use of GIS applications for decision making
- Lack of data management protocols and standards
- No responsibility for data management
- Inadequate capacity development in data management
- Inadequate tools for data sharing and data dissemination
- Lack of budget for data management and data analysis

Data Management Infrastructure in the Caribbean

Opportunities

- Access to open-source data sharing software
- Increasing access to training programs.
- Increase awareness among funding agencies on the importance of data management infrastructure
- Steady move to inclusive governance
- Access to high-resolution satellite imageries
- Lowering cost of data storage systems (Cloud computing)
- Common climate risk, common tools, and common solutions

Data Management Infrastructure in the Eastern Caribbean

The Threats

- Dependency on external climate models and forecast
- Dependency on external support for impact assessment
- Uninformed decisions on climate resilience programmes
- Little development of nationals with capacity to manage, interpret, and use climate models
- Inability to incorporate outputs of climate models into national development plans

The Carib_GeoNode Initiative

- **Moving from informal to formal data sharing**
- **Data sharing without loss of:**
 - **Ownership of the data**
 - **Control over what is shared**
 - **Control on who gets what**
- **It provides credit to data providers**
- **Easier access to data and products**
- **Platform for data management and data analysis**
- **Community of practice**

Our Objectives

- Seek mechanism for an harmonize regional data management through the creation of metadata standards and policies
- Evaluate and select protocols and technologies in support of data management
- Articulate critical capacity building and training needs of the region
- Provide support and training to GeoNode users and GIS practitioners
- Improve national and regional coordination to implement data management policies throughout the region

Looking forward

Specific Objective #1: Design and development of a comprehensive climatic data collection, data management, and analysis system through the PPCR programme

Possible Actions

- Acquisition and installation of telemetric hydro-climatic weather stations and software with sufficient density in all islands of the country.
- Professional training of climatologist, hydrologist, and agronomist.
- Technician training data collectors and instrument technicians
- Data processing software of remotely sensed climate data

Looking forward

Specific Objective #2: Development of a secured web-based GIS data analysis, data management and data dissemination platform

Possible Actions

- Acquisition and installation of elevation and bathymetric data
- Extraction of thematic data layers from remotely sensed imageries
- Training in spatial analysis, spatial modeling, and data management
- Development of policies, protocols, and standards in support of data management
- Hardware and software in support web-based GIS Development
- Establishment of a National GIS Data Management Centre

THE EXPECTED OUTPUTS

- Review of metadata policy guidelines for GeoNode users
- Next steps and roadmap for OECS data-management policy framework (timeline, tasks, persons, agencies)
- Identify partnerships with key regional agencies
- Identify national GeoNode capacity and interest to further open-source integration
- Create a Community of Practice (Coop) to facilitate data-management discussions, solutions and contributions to achieve tasks determine by roadmap activities

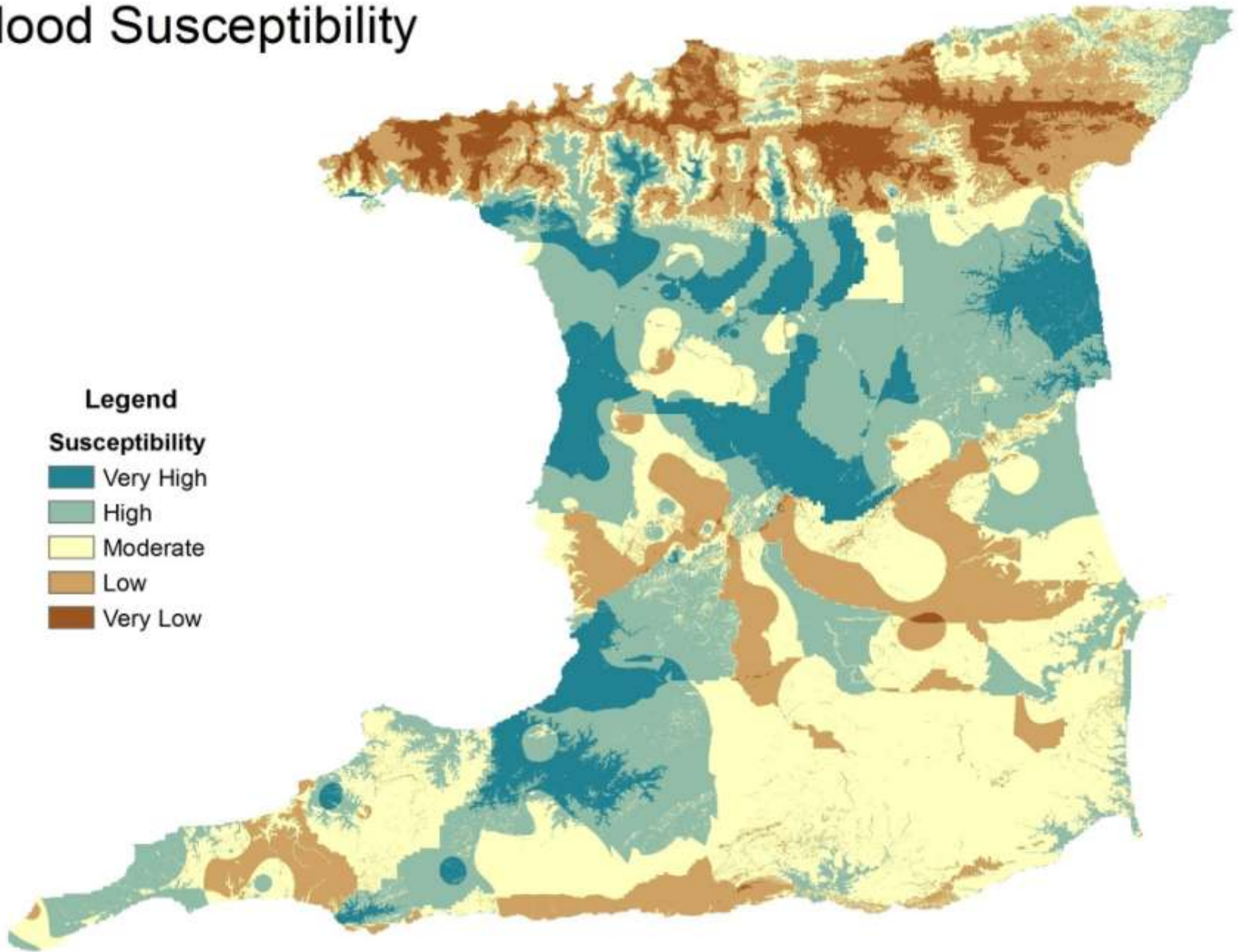
Flood Susceptibility



Legend

Susceptibility

-  Very High
-  High
-  Moderate
-  Low
-  Very Low



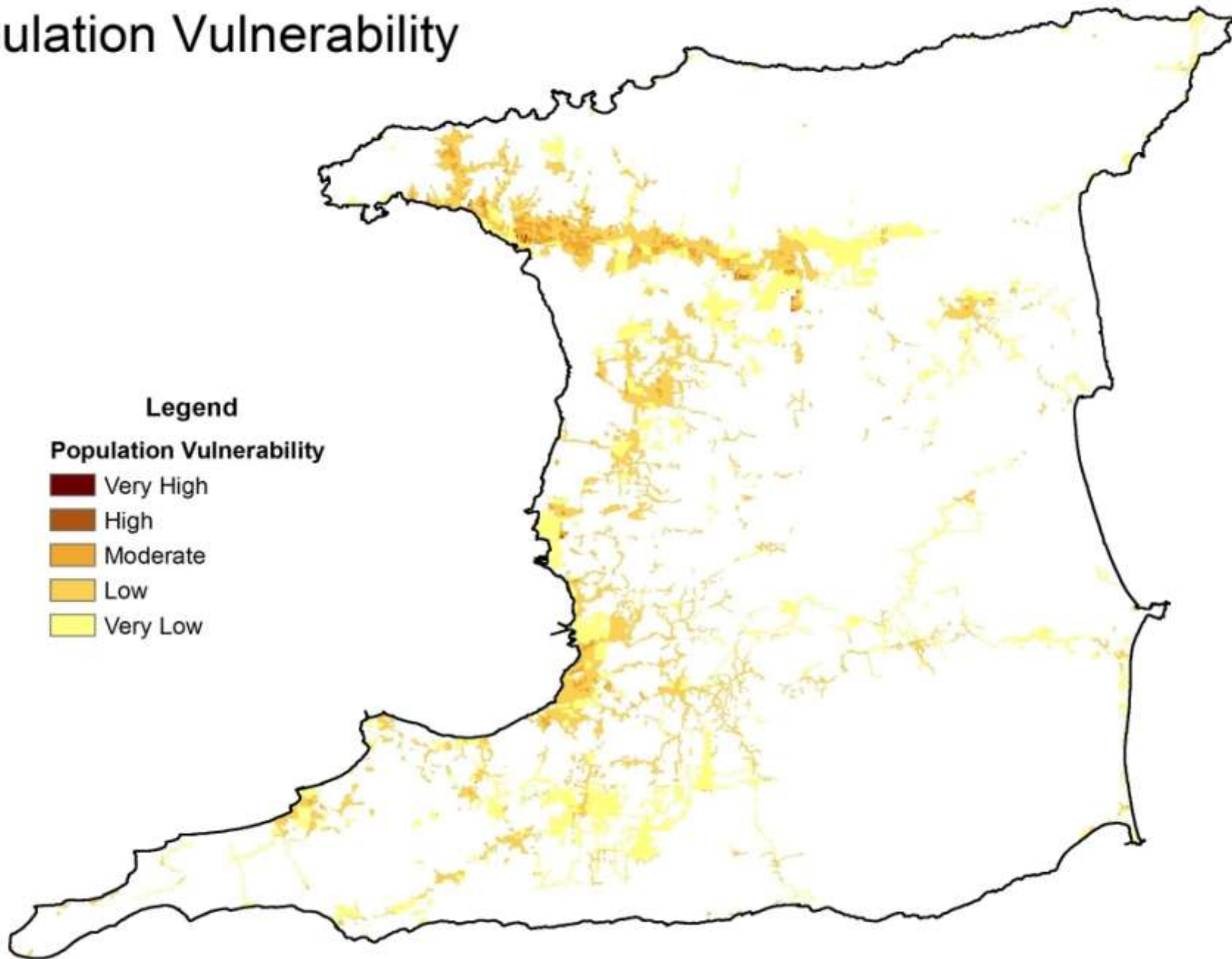
Population Vulnerability



Legend

Population Vulnerability

-  Very High
-  High
-  Moderate
-  Low
-  Very Low



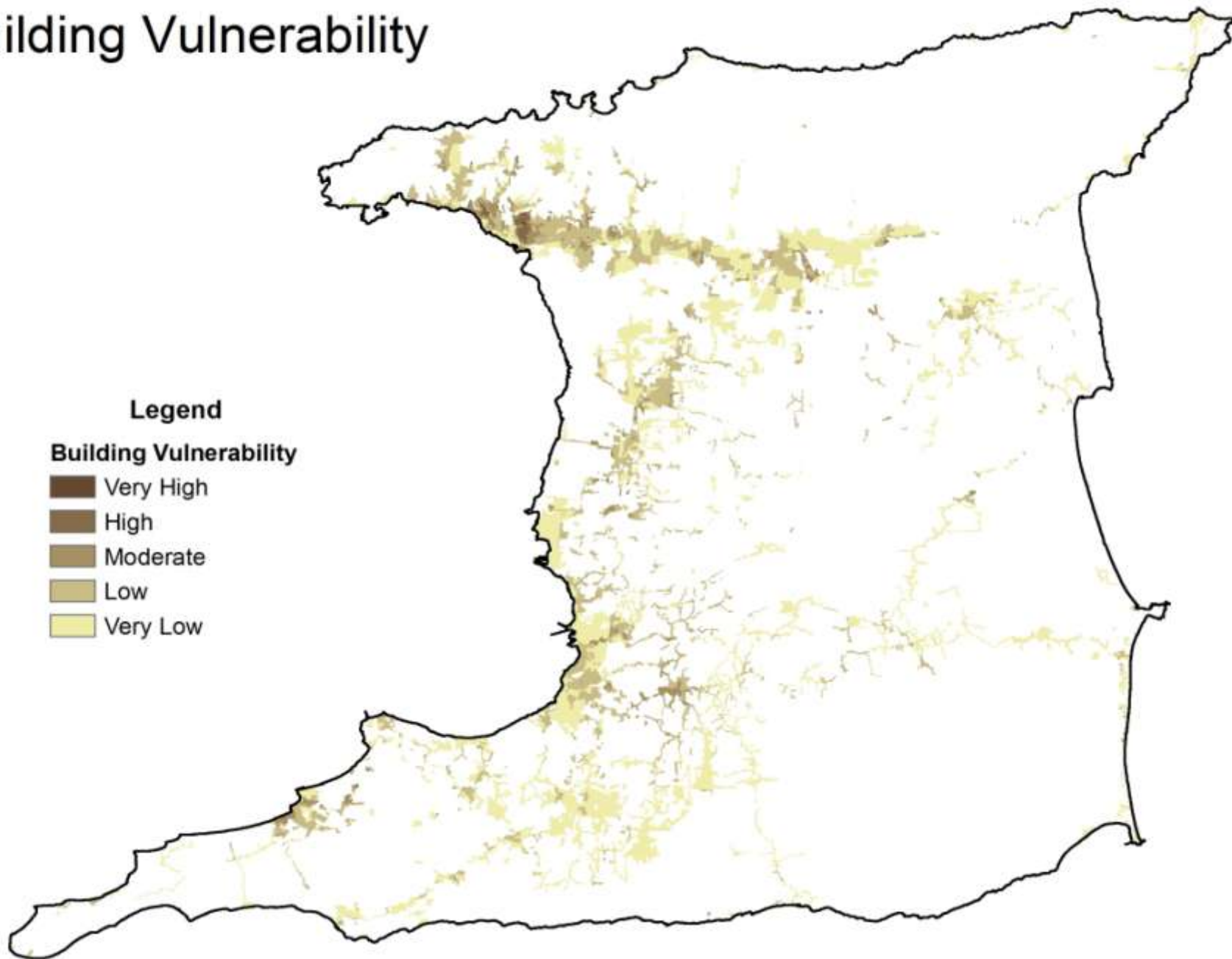
Building Vulnerability



Legend

Building Vulnerability

-  Very High
-  High
-  Moderate
-  Low
-  Very Low



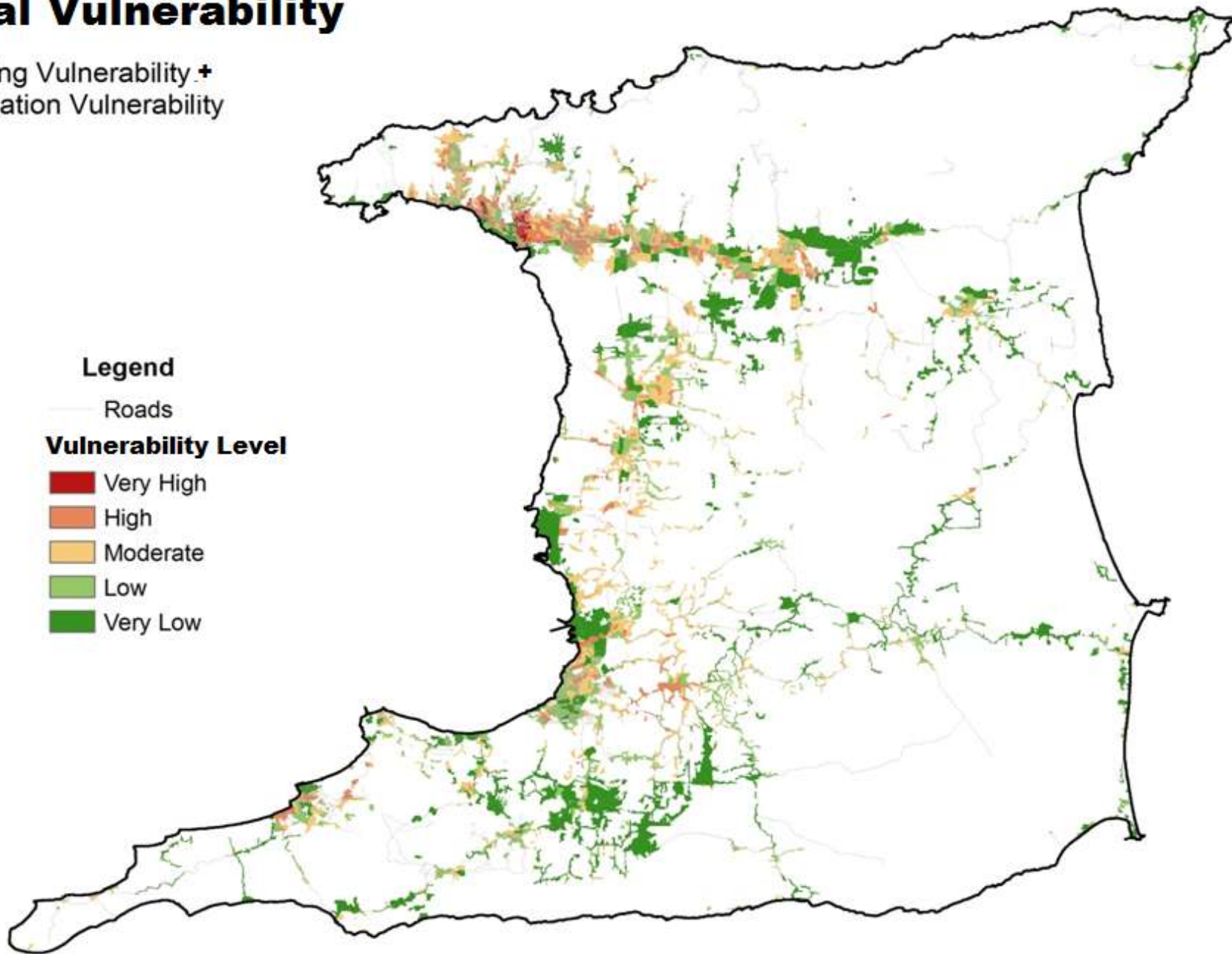
Total Vulnerability

Building Vulnerability +
Population Vulnerability



Legend

- Roads
- Vulnerability Level**
- Very High
 - High
 - Moderate
 - Low
 - Very Low



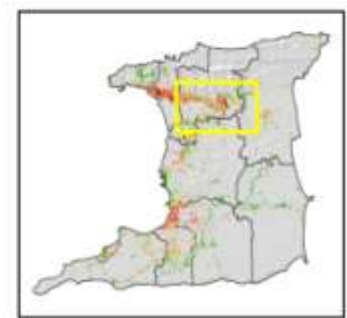
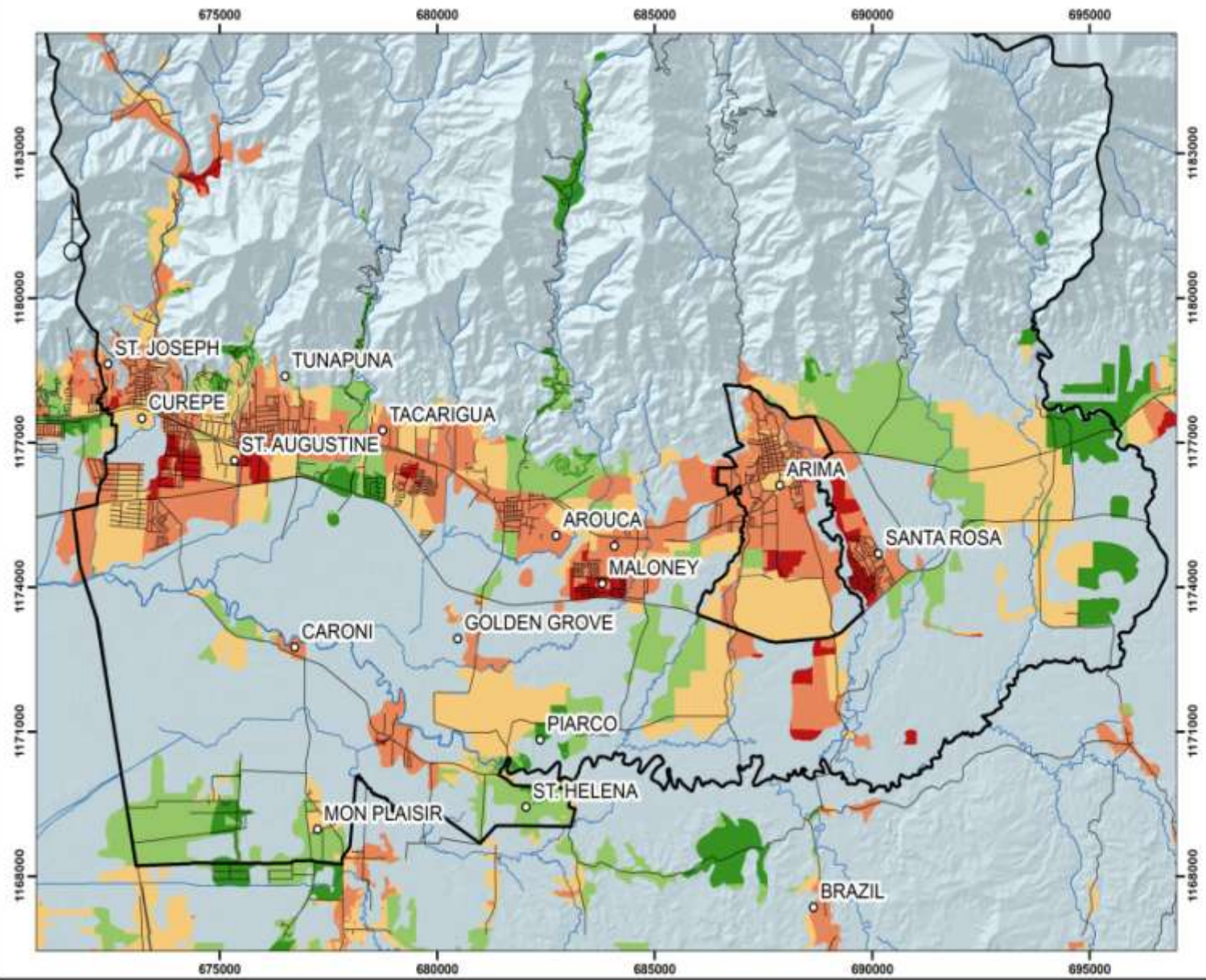
Multi-Risk Assessment: Flood

Legend

- Communities
- Roads
- Streams
- ▭ Tunapuna/Piarco Corporation

Risk Level:

- Very High
- High
- Moderate
- Low
- Very Low



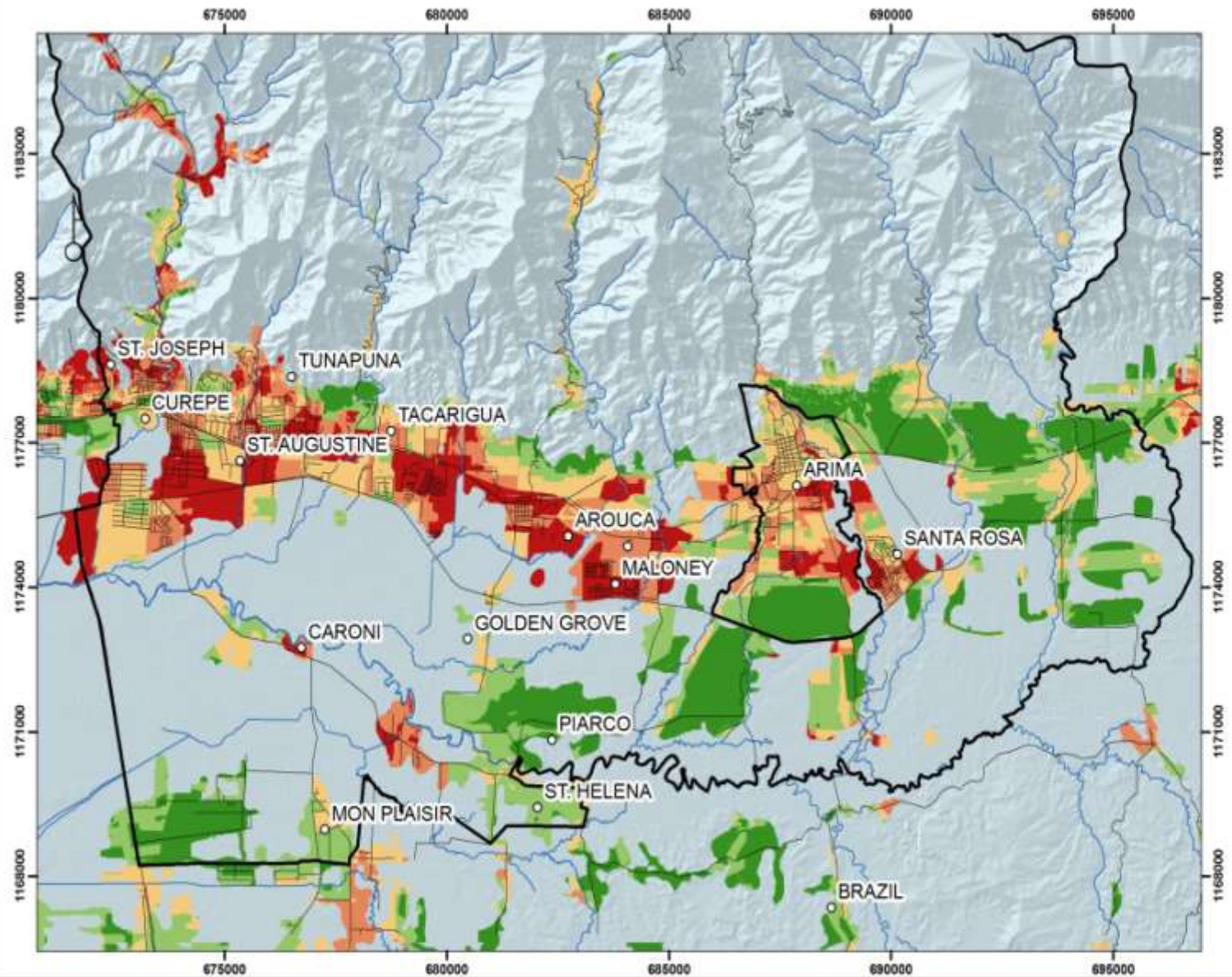
Multi-Risk Assessment: Landslide

Legend

- Communities
- Roads
- Streams
- ▭ Tunapuna/Piarco Corporation
- Very High
- High
- Moderate
- Low
- Very Low



0 1 2 4 Kilometers



End Note

In order to effectively and efficiently manage the consequences of climate change, we need high quality historic and current data on climate variability as well as location and quality of our natural and physical assets. Without which our climate resilience policies and actions will be vague and of little impact.

Thank you

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