DPSIR Framework

Handbook

HAITI

Driver-Pressure-State-Impact-Response (DPSIR) Framework for Haiti

OVERVIEW

This handbook summarizes the Driver-Pressure-State-Impact-Response (DPSIR) Framework conducted for Haiti, under the CSIDS-SOILCARE Phase 1 Project. It provides an overview of the methodology, assessments, and description of the two (2) intervention sites selected for Haiti. Importantly, the DPSIR results of each intervention site were highlighted along with the recommended interventions to address the land degradation issues. Through the various interventions, the project aims to restore 29,000 hectares of land and have 26,000 hectares of landscapes under improved practices. Consequently, for Haiti, the project will target 7000 hectares of land under Component 3.

The recommended interventions will be further discussed with stakeholders to determine the most effective interventions for each selected site. Additional information on the DPSIR Framework for Haiti and the other participating countries can be found in the detailed DPSIR report and the country-specific reports.

INTRODUCTION

The Partnership Initiative for Sustainable Land Management (PISLM) is implementing ***the Caribbean Small Island Developing States (SIDS) Multicountry Soil Management Initiative for Integrated Landscape Restoration and Sustainable Food Systems: Phase 1, referred to as the PISLM CSIDS-SOILCARE Phase 1 Project.*** *This project is being implemented in eight (8) participating countries, Antigua and Barbuda, Barbados, Belize, Grenada, Guyana, Haiti, Jamaica, and St. Lucia. The project's primary objective is to "strengthen Caribbean SIDS with the necessary tools for adopting policies, measures, and reforming legal and institutional frameworks to achieve Land Degradation Neutrality (LDN) and Climate Resilience".*

In this regard, five (5) components were established under the project to address and reverse land degradation in CSIDS. Furthermore, the Driver-Pressure-State-Impact-Response (DPSIR) Framework is one such intervention. This was coupled with the National Soil Surveys, Climate Risk Assessment, and Land Suitability Analysis conducted in participating countries. This handbook, however, will focus on the results of the DPSIR framework for Haiti intervention sites as highlighted by the DPSIR report.

The DPSIR framework is considered valuable for assessing soil degradation in CSIDS given its cause-effect approach which can determine appropriate management responses (Francis, 2023).

Under the CSIDS- SOILCARE Phase 1 Project, one (1) component will be addressed in Haiti as follows:

Component 3: "Resilience Building to Land Degradation, Natural Disasters and Climate Change through Climate Smart Agriculture and Drought Risk Management". **This component would be executed in Samana and the Rio Marrion River watershed.**

METHODOLOGY

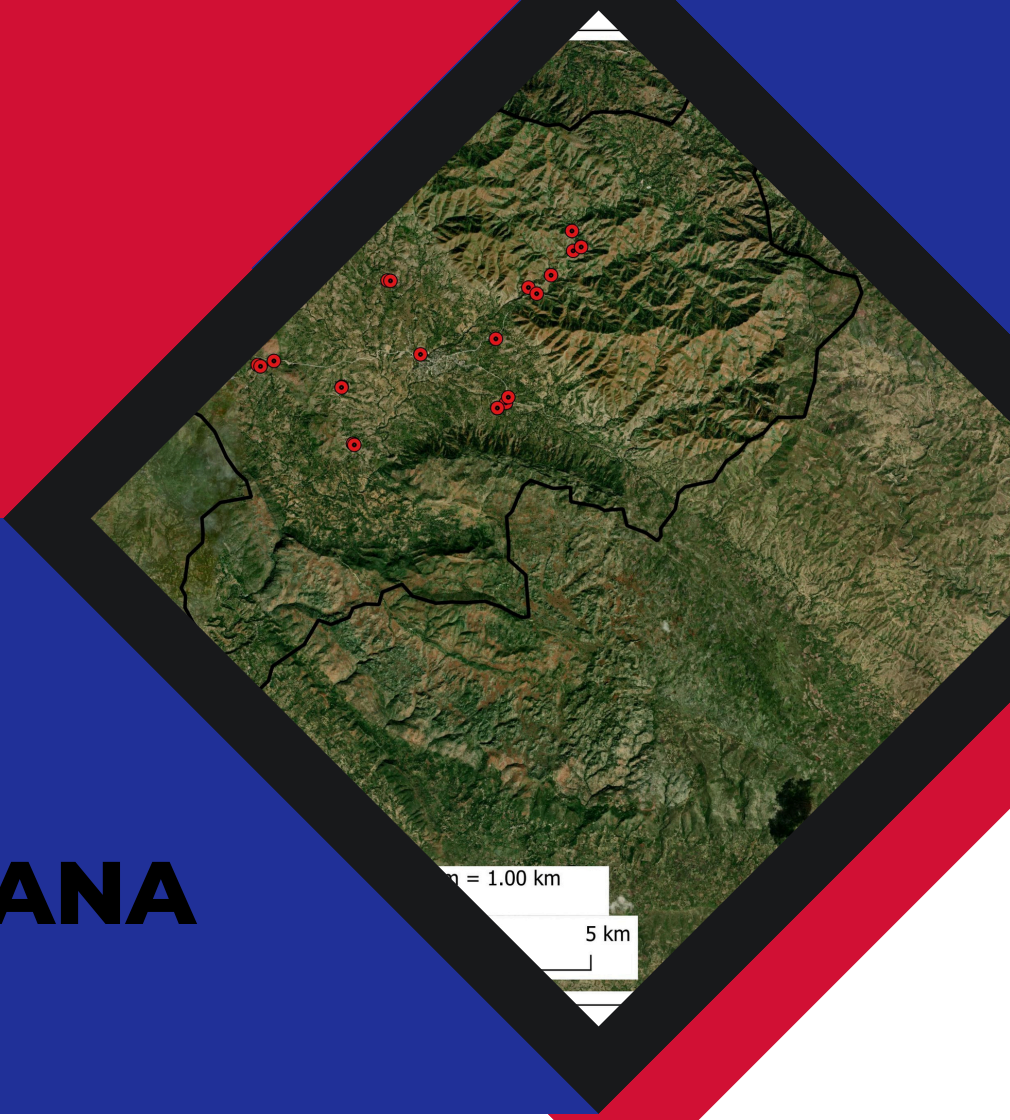
The research was conducted in four (4) stages as follows:

1. Comprehensive review of the Land Degradation Neutrality-Target Setting Process for Haiti.
2. Identification of hot spots affected by land degradation.
3. Participatory qualitative analysis was conducted within the locations identified as Intervention Sites.
4. Evaluation of the drivers, pressures, state, impacts, and possible responses (DPSIR) to land degradation of the Intervention sites.

NB. A land capability survey and a visual soil analysis were conducted based on the Protocol for the Assessment of Sustainable Soil Management. However, the findings are captured briefly in this handbook but details can be found in the DPSIR report.

A GIS analysis was conducted for each location to ascertain the nature of the land use and vegetation health through the Normalized Difference Vegetation Index (NDVI).

SOILCARE INTERVENTION SITES



NO. 1: SAMANA

It is estimated that 12,623 people live in the Samana community, whose settlement patterns include dispersed, nucleated, and linear forms. Grasslands and agricultural areas are the area's principal land usage. Production of charcoal, raising livestock, and agriculture are the primary means of subsistence. Grazing fields, fuelwood, lumber, medicinal plants, dry season water supplies, mines, and quarries are the primary natural resources used for production and livelihoods.

The territory's notable forms of land degradation include diminished soil health, a fall in soil biodiversity, soil contamination, soil degradation, and a reduction in vegetation. Uneven topography, extreme weather occurrences, bad farming methods, and operators' socioeconomic precariousness are the main causes of these problems. The primary effects are a decrease in soil fertility, a drop in vegetation, and soil deterioration.

SAMANA
DPSIR FRAMEWORK

Table 1: Driver-Pressure-State-Impact-Response (DPSIR) Framework

Framework	Indicator
Driving Forces	Human Population Growth
	Small land size
	Climate Change
Pressures	Agriculture intensification
	Increase demand for timber, agriculture products, exploitation of vegetation for fuel and heat, removal of forest and mangroves for charcoal production.
	Pollutants from factories, and farms enter water ways.

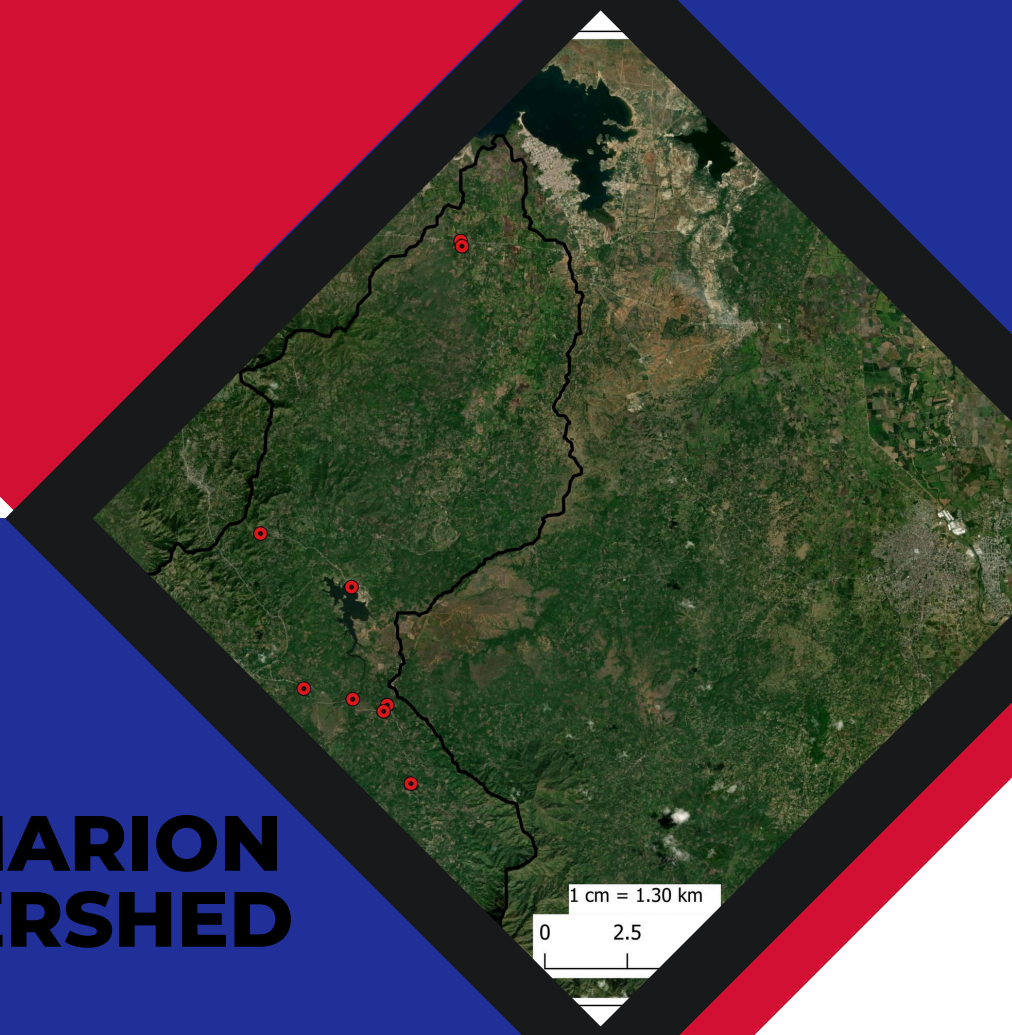
SAMANA
DPSIR FRAMEWORK

Framework	Indicator
State	Vegetation reduction
	Soil rill and gully erosion
	Reduced native animal and fish species
	Leaching of chemical waste from factory activities into soil resulting in contamination
	Contamination of water supply
Impacts	Disruption in ecosystem services due to contamination
	Household economic decline
	Increase demand on food imports and food insecurities
	Social vulnerabilities that increased crime and illicit activities

RECOMMENDED INTERVENTIONS FOR SAMANA

Table 2: Recommended interventions for Samana

Agronomic measures	Reafforestation measures
	Establishment of plant nursery
Other measures	Beekeeping, small stock farming (Poultry)



NO. 2: RIO MARION RIVER WATERSHED

The northeastern region of Haiti is home to the four municipalities of Vallières, Perches, Fort Liberté, and Terrier Rouge, which make up the Marion River Watershed. It is believed to be 21,592 hectares in size. The harbor of Fort-Liberté is where this watershed empties. It shares borders with three other watersheds: the Jassa River watershed to the east, the Trou du Nord watershed to the west, and the Grande Rivière du Nord watershed to the somewhat southeast.

12,179 people are estimated to live in the Marrion community, in diverse settlement patterns. Grasslands and agricultural regions are the two most significant land uses in the region. The primary sources of income are agriculture, raising animals, and making charcoal. The community's primary natural resources for production and livelihoods are grazing lands, fuelwood, timber, medicinal plants, dry-season water resources, mines, and quarries. Land slippage, decreased soil health, decreased water availability, and soil erosion are the main forms of land degradation in the area.

RIO MARION RIVER WATERSHED DPSIR FRAMEWORK

Table 3: Driver-Pressure-State-Impact-Response (DPSIR) Framework

Framework	Indicator
Driving Forces	Population growth
	Small farm plots
	Climate change
Pressures	Agriculture intensification
	Increase demand for timber, agriculture products, exploitation of vegetation for fuel and heat, removal of forest and mangroves for charcoal production.
	Increased variability in rainfall and rising temperatures
	Pollutants from factories, and farms enter water ways

RIO MARION RIVER WATERSHED DPSIR FRAMEWORK

Framework	Indicator
State	Soil erosion
	Reduction in coastal vegetation
	Reduced native animal and fish species
	Leaching of chemical waste from factory activities into soil and reduction in agricultural output and loss of land productivity
	Contamination of water supply with unregulated ships and factories
Impacts	Disruption in ecosystem services
	Household economic decline
	Increase demand on food imports
	Increased risk of hunger to the most vulnerable communities

RECOMMENDED INTERVENTIONS FOR THE RIO MARION RIVER WATERSHED

Table 4: Recommended interventions for the Rio Marion River Watershed

Agronomic measures	Climate Smart Agriculture farms, organic mulching.
Vegetative measures	Reforestation measures, establishment of plant nursery Climate Smart Agriculture farms.
Management measures	Compositing to improve fertility, setting up of compositing units.

REFERENCE

Francis, R. (2024). DPSIR Framework Analysis

Francis, R. (2024). DPSIR Framework Analysis, Haiti

PISLM (2021). Caribbean Small Island Developing States (SIDS) Multicounty Soil Management Initiative for Integrated Landscape Restoration and Climate-Resilient Food Systems- Phase 1.

PISLM (2023). Project Implementation Report