

Proposed Integrated plan for sustainable Swift River Watershed Management in Jamaica July 2013



Science – Ag, Meteorology, Ecology:

- Bustamante (Argentina);
- Mbamba (Malawi);
- Monnapula (Lesotho) ;
- Mowla (Bangladesh);
- Ivey (Jamaica) ;
- Navas (Venezuela) ;
- Puemape (Peru)

SWIFT RIVER WATERSHED



Data sources:

Water Resources Authority
1:50 000 Metric map of Jamaica



Degraded swift river watershed



Characterize the vulnerability of the watershed: Climate

Jamaica has a tropical maritime (marine) climate. Mean daily temperature ranges from a seasonal low of 26 ° C in February to a high of 28° C in August (33 ° C in recent years).

Islandwide long term mean annual rainfall exhibits a characteristic pattern, with the primary maximum in October and the secondary in May. The main dry season lasts from December to April.

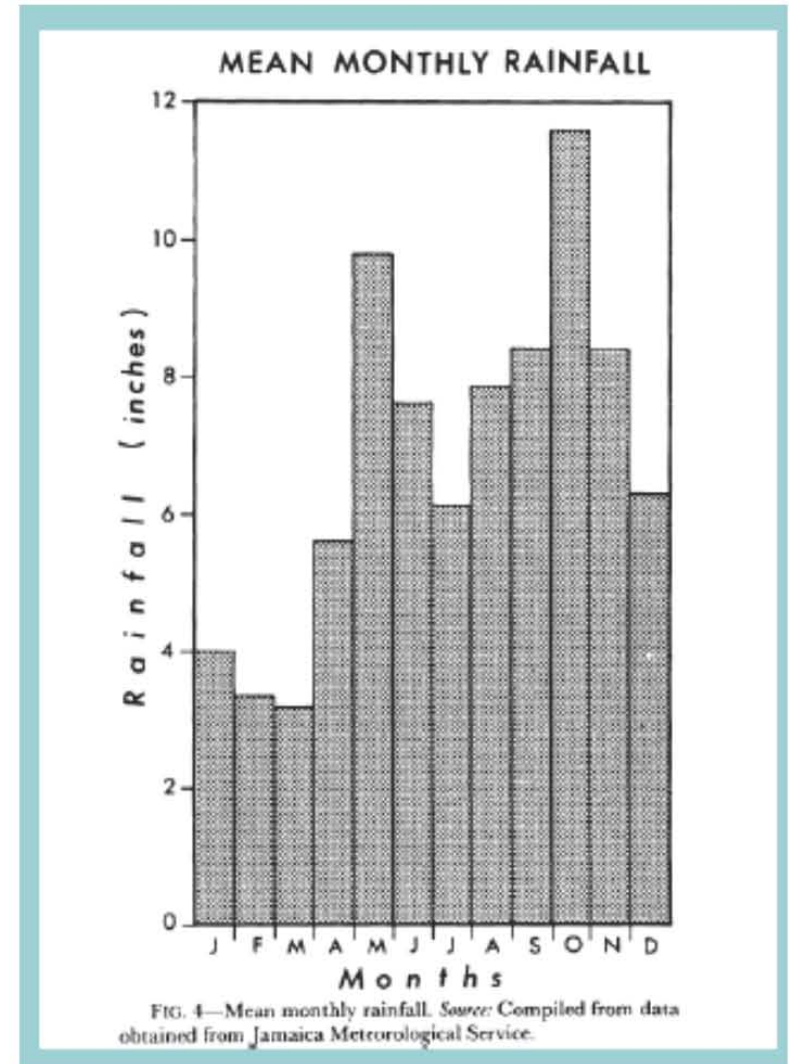
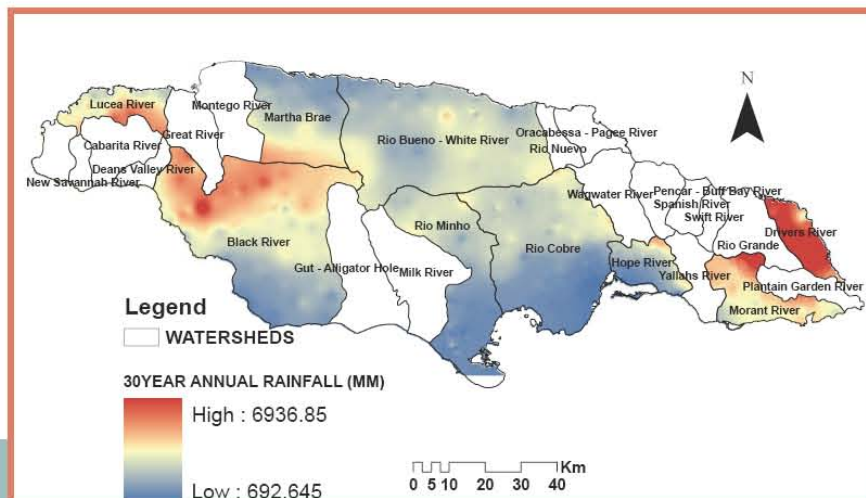


FIG. 4—Mean monthly rainfall. Source: Compiled from data obtained from Jamaica Meteorological Service.

Characterize the vulnerability of the watershed: food security



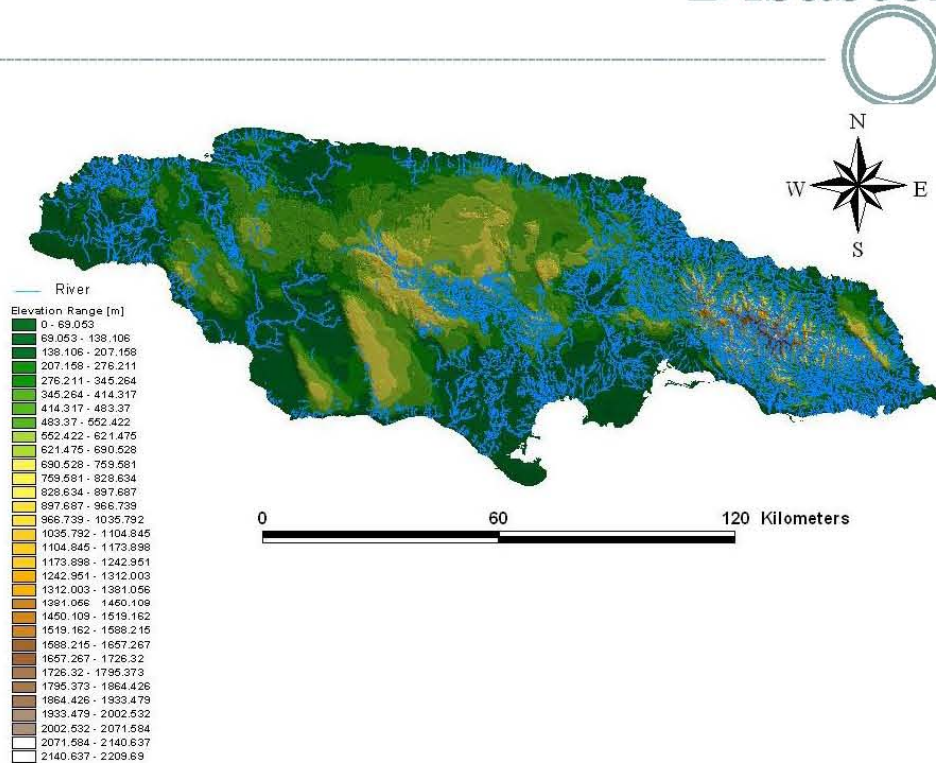
People around the Swift river's watershed get food from

- ✓ food imports,
- ✓ domestic production (which are not enough)

- The traditional crops are
 - bananas,
 - coffee,
 - Cocoa
 - Citrus.

Coffee was the most significant contribution to production and employment in this area.

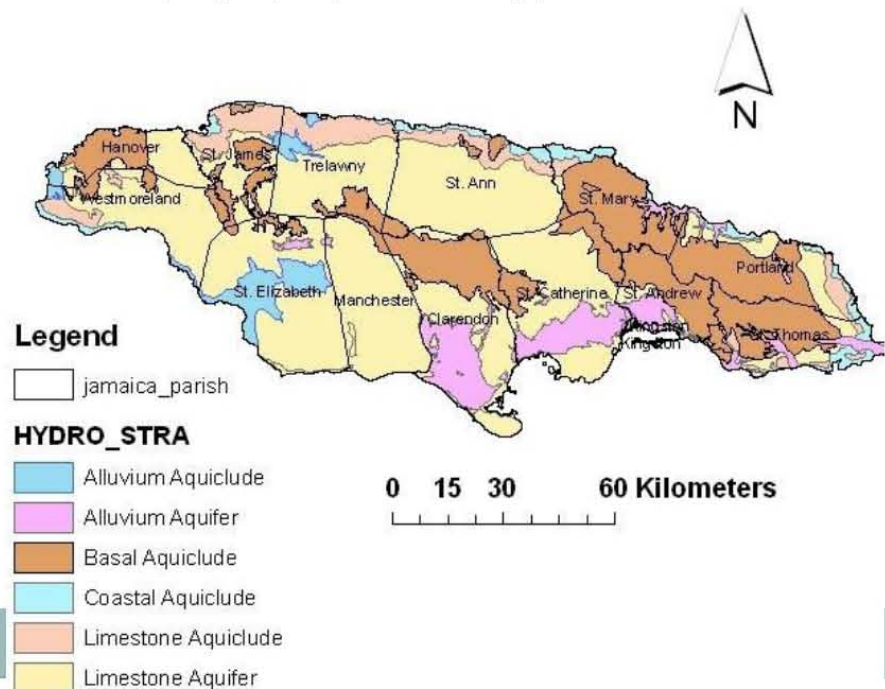
Characterize the vulnerability of the watershed: Disaster risk



Excess rainfall, steep topography leads to high erosion and downslope movement of debris during high rain associated with flooding.

Flooding is one of the natural disasters affecting Swift river watershed causing loss of life and property. **MAIN CAUSES OF FLOODING**

- Rainfall – high intensity rainfall associated with or without tropical storms or hurricane.
- Topography, Lithology.



Sediment flooding, 2002



Effects of flooding







Characterize the dimensions of the watershed

Area: 814 square kilometers (7.4 percent of the country)

Estimated Population (1998): 79,300 (3.1 percent of the population)

Population Density: 97 people per square kilometer

Location: In northeast Jamaica, with the Caribbean Sea to the northeast, Saint Mary's Parish to the west, and the ridge of the Blue Mountains to the south.

Current status of watershed & its services



1. No Plan in place
2. Flooding when it rains that results into:
 - Water lock off when it rains (domestic),
 - Roads and Homes/houses flooded
 - Community is marooned
 - River is heavily silted
3. Land degradation due to: Deforestation and bad agricultural practice which include heavy use of weedicides and no soil conservation practices
4. Food insecurity due to reduced crop and livestock production.
5. Infrastructure: high cost of clearing and repairing roads and house.
6. There was no fine print in the lease /sublease agreement for these lands
7. Community is not educated on watershed management
8. Health issues- nutrition, water bone diseases
9. Very steep terrains
10. All the lands up stream is abandoned

Anticipated threats to watershed and community



1. Loss of life
2. Health problems
3. Loss of the few remaining trees and other vegetative cover
4. Loss of marine life and terrestrial biodiversity
5. Loss of soils
6. unsustain water level during dry seasons

Proposed management interventions



Goal: To ensure integrated watershed management



Proposed management interventions

<u>Result 1:</u> Knowledge and capacities for WS management strengthened	<u>Result 2</u> A well managed upland watershed area	<u>Result 3</u> A well managed low land WS area for social and economic use
Activity 1.1: Sensitization meetings with all stakeholders including community members, NGOs, Government officers, PVT etc	Activity 2.1: Diversified forestation to recover the biodiversity	Activity 3.1: Introduction of improved agriculture technologies such as farm diversification, conservation agriculture, use of improved farm inputs etc
Activity 1.2: Formation of the WS committees and training them on group dynamics and leadership skills	Activity 2.2: Low cost soil stabilization and creation of swift river buffer zones to reclaim the abandoned degraded upland land	Activity 3.2: provision of Nutrition, health and gender education
Activity 1.3: Development of a participatory, holistic and realistic WS strategic Plan using the comprehensive and prioritized WS issues	Activity 2.3: construction of check dams and de-siltation of swift river and its distributaries	Activity 3.3: Establishment of local markets
Activity 1.4: Capacity building in general WS management techniques.	Activity 2.4: construction of gravity fed irrigation scheme for agriculture	
Activity 1.5: Participatory implementation of the plan	Activity 2.5: Establishment of water supply system for domestic use	
	Activity 2.6: Production of herbs and spices for home use and income generation	

Costs and other resource requirements



Economic negatives impacts of flood

Floods have devastating impacts on local, regional economic and on vulnerable people. The associated costs are related to the following impacts, and the watershed management programmes are expected to reduce the number of such economic hits:

Impacts	Cost (\$)	Percent of total cost (%)	Watershed Programmes	
			Cost (\$)	Percent of total cost (%)
Agricultural production losses				
Livestock losses				
Houses losses				
Roads losses				
Health sector impacts				
Excavation and cleaning work				



Costs and other resource requirements

Improved ecosystem health (water and soil)

- ✓ Benefits: reintroduction of lost threatened species (fish, endemic plants, aquatic plants, water birds, etc) by the erosion and river siltation
- ✓ Benefits-cost analysis: cultivation (\$\$...), financial support by funds of co-management institutions

Building dam in upland

- ✓ Benefits: power, recreation areas, navigation, wildlife habitat area, irrigation, water supply for municipal uses (domestic use)
- ✓ Benefits-cost analysis: Increased benefits due to recreation (\$\$...)



Costs and other resource requirements

Agriculture

- ✓ Benefits: high production, both diversity and quantity; supporting the income and nutrition of families (.... Kg/household, \$\$.... Kg).
- ✓ Benefits-cost analysis: Value of the agricultural products, local market demand (\$\$

Reforestation in upland

- ✓ Reforestation creates multiple environmental benefits and agro-economic gains
- ✓ Benefits: reduce run-off and erosion rates, improved soil density
- ✓ Benefits-cost analysis: Value of the trees will be \$\$ Alternative income generating activities (fruits cultivations)

Results after 10 years



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Thanks you!

