"Integrated Management of the Yallahs and Hope River Watershed Management Areas" Project (JA-G1001 or GRT/FM-14607-JA)

GEF ID: 4454

Final Terminal Evaluation Report

Submitted to:
National Environment and Planning Agency

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Acronyms and Abbreviations

ALAF	Alternative Livelihoods, Agriculture and Forestry
AOP	Annual Operations Plan
CBA	Cost Benefit Analysis
CBO	Community Based Organizations
CEA	Cost-Effectiveness Analysis
CP	Communications Plan
CPI	Cost Performance Index
CS	Communication Strategy
CSM	Carbon Stock Monitoring
CV	Cost Variance
CVs	Curricula Vitae
DO	Development Order
DSS	Decision Support System
EOP	End of Project
EA	Executing Agency
EFJ	Environmental Foundation of Jamaica
EMD	Environmental Management Division
FA	Financing Agreement (Non-Reimbursable)
FFS	Farmer Field School
FD	Forestry Department
FP	Financial Plan
GAP	Good Agricultural Practices
GEF	Global Environment Facility
GIS	Geographical Information Systems
GOJ	Government of Jamaica
GOJEP	Government of Jamaica Electronic Procurement
IDB	Inter-American Development Bank
IWRM	Integrated Water Resources Management
JACRA	Jamaica Agricultural Commodities Regulatory Authority
JBDC	Jamaica Business Development Corporation
JCDT	Jamaica Conservation and Development Trust
KAP	Knowledge, Attitudes, Practices
KAPB	Knowledge, Attitudes, Practices and Behaviour
KMA	Kingston Metropolitan Area
LOP	Life of Project
MDA	Ministries, Departments and Agencies (of Government)
M&E	Monitoring and Evaluation
MEGJC	Ministry of Economic Growth and Job Creation
MOFPS	Ministry of Finance and the Public Service

MOU	Memorandum of Understanding
MP	Member of Parliament
MSJ	Meteorological Service, Jamaica
MTE	Mid-term Evaluation
MTF	Medium Term Socio-economic Policy Framework
NEPA	National Environment and Planning Agency
NGO	Non-Governmental Organization
NLA	National Land Agency
NO	No Objection
NSDMD	National Spatial Data Management Division
NWC	National Water Commission
OA	Operations Analyst
OUR	Office of Utilities Regulation
PA	Partnership Agreement
PC	Procurement Committee
PDO	Project Development Objective
PEP	Pluriannual Execution Plan
PES	Payment for Ecosystem Services
PEU	Project Executing Unit
PIF	Project Information Form
PIOJ	Planning Institute of Jamaica
PIR	Project Implementation Report
PM	Project Manager
PMR	Project Monitoring Report
POD	Proposal for Operation Development
POM	Project Operating Manual
PP	Procurement Plan
PPCR	Pilot Programme on Climate Resilience
PPG	Project Preparation Grant
PPMERD	Planning, Projects, Monitoring, Evaluation and Research Division
PSC	Project Steering Committee
RADA	Rural Agricultural and Development Authority
RF	Results Framework
RM	Results matrix
RMP	Risk Mitigation Plan
SAR	Semi-annual Progress Report
SDC	Social Development Commission
SLM	Sustainable Land Management
SPI	Schedule Performance Index
SSS	Single Source Selection
STEPA	St. Thomas Environmental Protection Agency

SV	Schedule Variance
SWAT	Soil and Water Assessment Tool
TC	Technical Cooperation
TE	Terminal Evaluation
TIA	Technical Implementing Agency
TOR	Terms of Reference
TPDCo.	Tourism Product Development Company
TTL	Task Team Leaders
TWG	Technical Working Group
USD	United States Dollars
WAMM	Watershed Area Management Mechanism
WRA	Water Resources Authority
WMU	Watershed Management Unit
Y-H Project	Integrated Management of the Yallahs and Hope River Watershed Management Areas Projects

Project Identification and Financial Data

Project and Terminal Evaluation Data

GEF Project ID	4454
IA Project ID	JA-G1001
Project Name	Integrated Management of the Yallahs River and Hope River Watersheds
Country	Jamaica
Implementing Agency / Agencies	Inter-American Development Bank
Executing Agency / Agencies	National Environment and Planning Agency
Focal Area	Multi-focal areas: LD, BD, SFM/REDD
GEF Strategy / Operational Program	GEF-5: LD-1, LD-3 BD-2, SFM/REDD-1
Date of work program approval	July 1, 2011
Date of CEO endorsement	November 18, 2013
Date of project start / effectiveness	October 1, 2014
Date of project completion (completion of project activities; indicate expected or actual)	October 31, 2020
Name of Evaluators	Alicia A. Hayman Ph.D.
Date of Terminal Evaluation Completion	January 21, 2021

Financial data

Project Preparation through PDF/PPG grants (in US $)

Particulars	At approval	At PDF/PPG completion
GEF PDF/PPG grants for project preparation	151,400	151, 400
Co-financing for project preparation	0	0

GEF's Project Funding

Particulars	At CEO Endorsement	At Project Completion
GEF project grant	US$3,909,441	US$3,392,543.00
Co-financing + in-kind	US$ 8,872,357.28	US$10,359,606. 75
Total	**U$$12,781,798**	**US$13,752.149.75**

Project Co-financing Break up

Name of the Co-financier	Co-financier type[1]	Type of co-financing[2]	Co-financing at project start	Actual Co-financing at project end
Forestry Department	National Government	Grant	4,494,746	5,203,738
Rural Agricultural Development Authority	National Government	In-kind	353,000	508,008
National Environment and Planning Agency	National Government	In-kind	563,942.00	604,297
National Water Commission	National Government	In-kind	55,000	-
National Water Commission	National Government	Loan	1,355,740	1,355,740
Planning Institute of Jamaica	National Government	Grant	601,787	867,967
Forest Conservation Fund	National Foundation	Grant	1,380,000	1,536,123
Inter-American Development Bank	Multilateral Institution	Grant		283,734
Total Co-Financing			**US$ 8,872,357**	**10,359,607**

[1]Examples of categories include: local, provincial or national government; semi-government autonomous institutions; educational and research institutions; private sector; multilateral or bilateral organizations; Non-profit organizations; and, others.

[2] Grant; loan; or equity participation by beneficiaries (individuals) in form of cash, in-kind or material contributions.

Executive Summary

i. The "Integrated Management of the Yallahs and Hope River Watershed Management Areas" (Y-H) Project is a five-year project financed by the Global Environment Facility (GEF) and implemented through a Financing Agreement (FA) GRT/FM-14607-JA between the Inter-American Development Bank (IDB) as GEF Administrator and the Government of Jamaica (GOJ), and with the National Environment and Planning Agency (NEPA) as Executing Agency (EA). The initial budget for the Project was US$12,781,798, inclusive of US$3,909,441 in grant funding from the GEF and US$8,872,357 in co-financing from the GOJ. Implementation was supplemented by a Technical Cooperation (TC) Grant from the IDB's Ordinary Capital Strategic Development Programme, along with other sources and types of co-financing reported over the Life of the Project (LOP) that brought the total spent to US$13,752,149.75. The project development objective (PDO) was to improve the conservation and management of biodiversity and the provision of ecosystem services in the Yallahs and Hope Watersheds.

ii. This Terminal Evaluation (TE) is being conducted to analyse project performance against, and likelihood of achieving, the PDO, challenges encountered and corrective actions taken, successes and lessons learned and provide recommendations to closeout and beyond. The TE utilized a mixed-methods approach in a process of triangulation that assessed the project against 5 GEF evaluation criteria: Relevance and Coherence, Effectiveness, Efficiency, Impact, and Sustainability. The TE also rated project performance using the GEF Rating Scale for terminal evaluations.

A. Key TE Findings

iii. The Y-H Project aligns with Vision 2030 Jamaica- National Development Plan and the two Medium Term Socio-Economic Policy Framework (MTF) documents that spanned the life of project (LOP) as well as policies, plans and programs and mandates of key watershed agencies[3]. The project is consistent with the GEF Biodiversity, Land Degradation and Sustainable Forest Management REDD-Plus objectives and is also well-aligned to the IDB's plans and its Country Strategy (CS) for Jamaica.

iv. To achieve the PDO, the Y-H Project intervention strategy was found to be coherent and logical with a mix of strategies that worked at multiple levels to address several drivers of watershed degradation. There was a clear relationship among activities, outputs, outcomes and the desired impact (across the three intervention areas), and most of the planned activities were found to be adequate to produce the desired outcomes.

[3] National Environment and Planning Agency, Water Resources Authority, Forestry Department, Rural Agricultural Development Authority, Meteorological Service of Jamaica and National Water Commission.

v. The design required time-sensitive sequencing of planned activities in order to optimize the uptake of Integrated Watershed Resource Management (IWRM) practices that support achievement of the PDO. The project's implementation strategy utilized and built on existing capacities, capabilities and relationships among watershed agencies. A key underpinning design assumption was that stakeholders understood the processes and the contents of supporting documents sufficiently well to be able to translate them into a solid strategic and operational plan at implementation.

vi. At end of project (EOP), the Y-H Project achieved an average of 39% of its impact level, 60% of its outcome level and 97% of its output level results projected in its Results Framework. The Y-H Project did not achieve the targets set for its two impact level results measured by impact level indicators *I1.1 - Sedimentation in waterways* and *I2.1 - Tons of carbon sequestered* as 56% and 21% of the targets were achieved respectively. The Y-H Project was successful in achieving 60% of its outcome level indicators having achieved 100% of the targets for both Outcome 1 indicators *O1.1* Watersheds covered by development orders that include land cover and soil management (SLM) *and O1.2 Agencies updating data in DSS (Decisions Support System) according to agreed protocol*, 100% of the Outcome 3 indicator "*Improved soil cover and SLM in project area*" target and none of the Outcome 2 indicators O2.1 *Area under contract* and O2.2 *Contracts signed* targets. At EOP, 97% of the expected output level results were achieved, as the Y-H Project met or exceeded most of the planned outputs under its three project components. At the impact level both indicators were inadequate measures of the expected results for the impacts of "*Reduced soil erosion and siltation in both watersheds*." Strong project communications and visibility were evident and maintained throughout the Y-H Project LOP. Of note was the project's successful placement in the finals of the IDB's "Superheroes of Development Award" 2019 that recognizes innovative solutions and lessons learned from the Y-H Project implementation experience. The project lost an opportunity to link the significant benefits derived from its work with farmers under Outcome 3 to Outcome 2 in the absence of progress to Payment for Ecosystem Services (PES) implementation given the delays in completing the PES Design.

vii. Factors that contributed to the success of the Y-H Project and the extent to which the PDO was achieved mirrored the principles of integrated watershed management: A reasonably participatory and rigorous evidence-based design; sound host government commitment; effective coordination of multiple IWRM partner agencies; a well-defined and structured governance framework; targeted geographic area and stakeholder participation; iterative planning process, with adaptive actions; alignment and complementarity with partners' programmes and plans; and multiple benefits from project interventions.

viii. The Y-H Project was met with a plethora of challenges throughout its life, from design to implementation. Many, though not insurmountable, often took significant time for resolution and were indicative of adaptive actions being utilized, to varying degrees. Challenges included: insufficient utilisation of the design guidelines in mobilization; inadequate technical capacity around PES implementation; administrative and procurement bottlenecks; limited state of readiness for implementation; gaps in Project Executing Unit (PEU) and partner agencies' capacity and constant staff turnover; quality issues associated with project results; inadequate focus on the enabling environment; absence of a trigger mechanism for urgency of action on poor project performance; limited change control and absence of a structured process to identify workarounds that address project constraints and minimize implementation delays.

ix. Of the US$3,909,441 allocated for the Y-H Project, 87% (US$3,392,543) was spent as at November 23, 2020. At EOP, the co-financing was US$10,359,606.75, which exceeded the requirements agreed to in the FA (2014), despite delays in delivery of annual co-financing reports, and included complementary contributions from other projects in the project area. The Y-H Project was not cost-effective as overall outputs and outcomes were incomplete at EOP, while the economic cost of implementation exceeded the planned cost due to unplanned cost incurred from implementation delays. Procurements were achieved at a reasonable direct cost, relative to budget allotment for outputs and outcomes. Significant cost savings were realised for Component 3 at procurement. The project was implemented across the targeted areas with high environmental benefit and low opportunity cost as defined in the FA (2014). When compared to other similar projects with an integrated, multi-faceted design, the project was comparable in cost and planned outcomes, with high environmental benefits and low opportunity cost. There was strong adherence to GOJ and IDB Procurement Guidelines. Average Cost Performance Index (CPI) of 0.26 and Schedule Performance Index (SPI) of 0.61 are indicating that significant delays occurred during implementation. The cost variance (CV) indicates that actual project implementation cost exceeded the value created annually; with US$6.787 million associated with implementation delays. The SPI, CPI, CV and Schedule Variance (SV) are indicative of project inefficiencies associated with implementation delays.

x. The Y-H Project's *ex-post* Cost Benefit Analysis found that the project returned a negative net benefit of US$2.193 million. The benefits of the Project were conservatively estimated at US$22.316 million, inclusive of a macro policy enhancement capacity of US$20.941 million and micro level (livelihood improvement) increased profits of US$1.374 million. The total economic cost of implementation was US$24.509 million, inclusive of combined GEF and GOJ

financing of US$14.285 million; US$6.787 million in implementation delays; US$1.52 million in unused fiscal space; along with a disbursement variance of US$1.367 million; unspent GEF funds of US$0.534 million and TC grant funds returned amounting to US$0.016 million.

xi. At start-up the Y-H Project had an adequate M&E plan that outlined the approach and methodologies to be used by the Executing Agency and coordinated by the PEU with the TIAs, to monitor results and track and report on the progress made towards achieving the PDO. However, M&E implementation did not benefit from an updated M&E plan that provided a shared framework for output, outcome and impact level data collection, analysis and reporting. Gaps in partner technical and infrastructural capacity also limited M&E implementation. Key baseline assessments essential for impact analysis were not completed as required in the project's M&E plan. Despite reference to gender in the design documents (M&E Plan, Rural Development Report), there was no clear gender integration strategy or disaggregated reporting, although gender considerations were incorporated in the Communications Strategy.

xii. The IDB supported the GOJ in project design by providing technical expertise to design a complex, multi-faceted project that incorporated the innovative PES mechanism to address local challenges with sustainable financing for IWRM. The IDB provided supervisory support for project management and procurement and technical and financial input over the life of project (LOP) and exercised flexibility in response to emerging project implementation issues. The IDB was responsive in providing No Objections and worked with the PEU to identify expertise for activities, especially where they did not exist locally and where support was not available in-house on the IDB's team. Throughout the LOP, the IDB had transitions in Task Team Leaders and Operational Analysts that resulted in gaps in communication with the PEU. Changes in corporate archival systems also contributed to gaps in project institutional memory. Although the Project Monitoring Report (PMR) was the only document providing year-to-year tracking of project performance against RF indicators, it was not recognized as a formal report for monitoring within the FA. The multi-year "alert" and "problem" status, included in the PMR, was communicated to the GOJ during annual IDB Portfolio Reviews, but efforts at corrective action were slow and reflected post mid-term.

xiii. The Y-H project used its extension programme to change farmers agricultural practices as farmers learned and applied SLM practices gleaned in the Farmer Field School sessions. Through the Soil and Water Assessment Tool analysis, the PEU was able to demonstrate an 8% reduction in sedimentation attributable to implementation of activities under the project targeting land use change. The Project also made attributable contribution to improved coordination across watershed management partner agencies, with greater science and data-

driven decision-making. Partner buy-in for the Y-H Project PES mechanism and understanding of their associated roles were as a result of the technical exchanges and participation in the development of consultancy outputs.

xiv. Government ownership and commitment to the PDO was implicit in the project design and the implementation strategy. These, however, varied significantly during implementation, with strong commitment in areas for which partner agencies had a mandate and plans but weak in areas such as Outcome and Impact measurement, tied to the cumulative achievement of results at the output level; and articulation of an IWRM approach to project implementation though "whole of Government" actions. At the time of this TE, the PEU had developed a draft sustainability plan, that requires follow-on engagement and validation by the partners to build coherence and secure partner commitments. A thorough risk analysis and considerations of environmental and social safeguards are other elements of the plan that have not yet been completed. Also, important to cross-agency sustainability planning will be considerations of lessons learned and success factors from Y-H Project implementation and committed financing for the costed plan.

xv. The TE documented lessons learned throughout the LOP. Priority lessons include:

- Where there is significant time lag between project design and implementation, it is important that (i) all design elements (operational and technical) transition into, and be used to inform, implementation (project design documentation should be reshared and project partners re-engaged prior to project start-up) and (ii) planned activities, timelines and costs should be reassessed at start-up and measures put in place to address any identified gaps, with donor approval, and while adhering to project logic.
- Tracking of project performance (e.g., via an "at-a-glance" project performance dashboard) and the use of a control/trigger system will allow oversight units, structures and entities, internal and external to the EA, to quickly determine the state of project execution and identify and implement remedial actions as needed.
- M&E is critical for determining project performance and supporting decision making within the project context. Any delays in establishing baselines for project interventions (e.g., farmer's knowledge) can limit the project's ability to establish attribution to outcomes.
- Watershed management cannot be solely implemented through project mechanisms but needs to have a long-term programmatic approach, given the importance and value of watersheds to the environment and people of Jamaica. Sustained action to maintain and improve watersheds and secure ecosystems health requires commitment of all stakeholders and government support for sustained financing that is complementary to any other long-term financing mechanisms established.

- The Y-H Project experience in its attempt to establish sustainable financing mechanism for IWRM using the PES, underscores the need for continued investment in sustainable financing mechanisms that create incentives for the range of stakeholders.

B. Project Performance with respect to GEF Evaluation Parameters

Parameter	Grade[4]	Justification
1. Outcome	**MU**	• The project had a strong design that was well-aligned with GEF and technical agencies' mandates and plans. However, there was partial achievement of the outcome level results. The project was not cost-effective and was significantly delayed, and these affected achievement of project results.
i. Relevance	S	• Aligned with GEF Biodiversity, Land Degradation and Sustainable Forest Management REDD Plus objectives. • Aligns with the Vision 2030- Jamaica- National Development Plan and two MTF documents, technical implementing partners' policies, mandates, corporate and operational plans and programmes • Was designed with a mix of activities focused on policy, institutional and practice that produced outputs, all expecting to contribute to one or more of the project's three main outcomes. • Strategy was found to be sound and coherent, with a clear path to meet its PDO. Most of the planned activities were found to be adequate to produce the desired outcomes.
ii. Effectiveness	MS	• The Y-H Project was successful in achieving 60% of its outcome level indicators, having achieved 100% of the targets for both Outcome 1 indicators, 100% of the Outcome 3 indicator target and none of the Outcome 2 indicator targets. • The target for both Outcome 1 indicators - O1.1: Watersheds covered by development orders that include land cover and soil management (SLM) and O1.2: Agencies updating data in DSS (Decisions Support System) according to agreed protocol were met. No results were achieved for Outcome 2: Functioning pilot PES system. Both associated indicators O2.1: Area under contract and O2.2: Contracts signed could not be measured at EOP. For Outcome 3, 1296 hectares were reforested in the WMUs.
iii. Efficiency	U	• The Y-H Project implementation was not cost-effective as overall outputs and outcomes were not fully achieved. In addition, the total economic cost of implementation, exceeded the planned cost, while achieving less than desired planned output and outcomes. Those outcomes and outputs that were completed, were achieved at reasonable direct cost but suffered from high unplanned cost associated with implementation delays. • The project was implemented with 87% (US$3,392,543) of the GEF budget ($3,909,441) spent. • The Y-H Project's *ex-post* Cost Benefit Analysis found that the project returned a negative net benefit.

[4] *S – Satisfactory; MS – Moderately Satisfactory; MU – Moderately Unsatisfactory; U – Unsatisfactory; HU – Highly Unsatisfactory*

Parameter	Grade[4]	Justification
		• Despite a competitive procurement process with least cost, average Cost Performance Index (CPI) of 0.26 and Schedule Performance Index (SPI) of 0.61 are indicating that significant delays occurred during implementation. The cost variance (CV) indicate that actual project implementation cost exceeded the value created annually; with US$6.787 million associated with implementation delays. The SPI, CPI, CV and SV are indicative of project inefficiencies associated with implementation delays.
2. Sustainability	**MU**	• Absence of a clearly articulated, agreed upon and financed sustainability plan. • Significant risks to continuation of project benefits and outcomes remain unaddressed. • Of 18 risks to sustainability that have been identified, 16 are "High "and 2 are "Medium", giving an overall risk rating of "High" for sustainability. These risks have been categorized as follows: financial, socio-political, institutional, environmental and technical.
3. Quality of Project M&E	**U**	• Strong design but weak implementation reflective of capacity gaps (systems and technical knowledge) and poor sequencing across both EA and the GEF Administrator (IDB).
i. Quality of M&E Design	S	• The Y-H Project had a sound RF at design and adequate M&E plan that was referenced in the drafted POM (2013), the FA (2014), and the POD (2014), which outlined the approach and methodologies to be used by the EA and coordinated by the PEU with the TIAs, to monitor results and track and report on the progress made towards achieving the PDO. The budget included in the M&E plan (2014) was found to be inadequate to execute the M&E requirements of the project.
ii. Quality of M&E Implementation	HU	• Absence of an updated M&E plan for the project, following design and start-up, that would align with activity or partner M&E plans. • Absence of a defined data collection strategy that detailed the collection and tracking of data for all levels (output, outcome and impact) of the RF, across all partners. • Inadequate documentation of multi-year changes to the RF (and indicator targets) from design to entry and during implementation. • Absence of a "PEU-owned" performance indicator tracking system that monitored real-time status of all project indicators (referencing supporting documentation for validation). • Baselines conducted well after the start of associated activities – for example, KAPB assessment – that limited the efficacy to report on the changes effected by the project for key components, e.g., farmer adoption and change in attitudes and behaviours. • Limited M&E capacity building provided to PEU staff and partners – to secure the training and equipment needed to support monitoring and reporting at all levels of the RF and after project closure. • An output-focused reporting to the oversight body with limited to no assessment of progress at the outcome and impact levels. • Insufficient budget to meet the M&E requirements – as some supporting consultancies exceeded the projected amounts and training and equipment needed for data collection were not budgeted for or addressed.

Parameter	Grade[4]	Justification
4. Quality of Implementation (GEF Administrator)	**M S**	• Annual technical review missions were held pre-mid-term but there was none post mid-term. • There was good communication with the PEU, with regular meetings held. • Project status and its implications were communicated to GOJ during annual portfolio reviews throughout the LOP. • There were multiple transitions in TTLs and OAs over the LOP, resulting in gaps in communication • Changes in IDB archival system resulted in gaps in institutional memory • There were weak linkages made with design outputs. • The IDB supported the PEU to identify expertise for consultancies. • The PMR, IDB's annual monitoring tool, provided significant information on project status for tracking implementation progress. • The IDB's attempts to improve project focus on outcomes and impacts were not well articulated and did not result in improvements in RF monitoring.
5. Quality of Execution (GOJ/EA)	**M S**	• Sound host government commitment for recurrent watershed activities; effective coordination of multiple IWRM partner agencies; a well-defined and structured governance framework; targeted geographic area and stakeholder participation. • The EA/PEU's fiduciary management was strong and reflected full compliance to the FA (2014) while adhering to the procurement protocols of both the GOJ and the IDB. • GOJ overall co-financing requirements were met and exceeded, but annual reporting was weak. • Inadequate translation of project design intent and FA (2014) requirements into implementation. • Fair communication and visibility, but engagement of some key stakeholders not evident. • Inconsistency in backstopping and limitations in coordination of support provided to the PEU by the EA. • Limited tracking of project status to ensure timely adaptive management and corrective actions taken.

C. Recommendations

xvi. The TE provides the following recommendations to the PEU, the Host Government, the GEF and IDB that utilise the findings to stimulate future corrective actions. Recommendations either reduce the risks[5] to intervention impact and sustainability or inform improvements in future scale-up and replication. The recommendations are grouped in short and medium to long-term timeframes, with required actions needed (i) before the project closes and (ii) post

[5] Key risk categories included in the TE's analysis of risk to sustainability: Technical, Financial, Socio-political, Institutional, and Environmental

closure. In addition, Annex 23 provides general recommendations to the GOJ and IDB to improve implementation efficiency of future donor-funded projects.

(A) <u>Closeout Actions</u>

1. **<u>PEU</u> - Develop a closeout plan, for handover to the EA, that defines critical "next steps" for incomplete activities[6] in order to secure the project's investments**. Develop the closeout plan (including a risk analysis) in collaboration with key partners and use the Y-H Project momentum to complete the remaining steps.
2. **<u>PEU</u> - Establish a shared knowledge management archival system between IWRM partner agencies that captures documents, other materials and project management records.** Use the system in transitioning to a programme, design of other watershed initiatives, post-project auditing in collaboration with NEPA projects and knowledge management standards. Make technical lessons learned available to partners and other watershed stakeholders.

(B) <u>Post Closure</u>

3. **<u>NEPA</u> - Lead a multiagency response to develop and implement a strategy to move the PES output from design to implementation.** Given the critical need for sustainable financing for watershed management and having selected the PES as a mechanism for long-term financing, including the design work during LOP, the following is the recommended roadmap to move this mechanism to full implementation:
    a) Obtain full stakeholder agreement and ownership on the drafted PES design documents.
    b) Prepare, with participation of PES stakeholders, a Specific, Measurable, Achievable, Realistic and Timebound (SMART) action plan defining actions with assigned roles and responsibilities to move the existing PES outputs through to implementation, including obtaining required government approvals.
    c) Re-engage political directorate (e.g., Water, Environment and Agriculture Ministers) to secure a champion for the PES.
    d) Mobilise, with urgency, follow-on resources to secure PES implementation in the WMUs, exploring opportunities with donors, private sector, and lobbying government for committed budgetary allocation. Use existing information from Y-H Project implementation expenditures to develop a budget proposal that supports an annual work programme (inclusive of the pilot phase defined in the PES design documents (Deliverable #16 – Sustainable Financing Plan).

[6] For example, the complete testing of the GIS-DSS system and establishment of protocols for data sharing between the key agencies, PES buy-in and Cabinet approval, Watershed Policy Cabinet approval, presentation and validation of the WAMM to wider watershed stakeholders, CSM, and Ecological Assessment.

e) Implement the pilot to test and generate lessons learned that can be used for expanded PES implementation.
f) Implement the full PES scheme utilising lessons learned from the pilot.

4. **NEPA** - Transition the Y-H Project to a long-term programmatic intervention that supports the sustainable financing mechanism (PES) and other IWRM activities that may be prioritized later. To facilitate this broader intervention:

a. *Develop a long-term[7] Y-H Integrated Watershed Management Plan* for the WMUs in collaboration with the relevant partners agencies. The plan should align with and build on the Y-H Project sustainability plan and the actions to advance the PES and other prioritised activities; while expanding to include new elements such as climate change, disaster risk reduction and Sustainable Development Goals (SDGs) – that can also attract new and additional financial resources.
b. *Support the watershed plan with a strategic plan* integrating the WAMM M&E framework elements and the GIS – DSS system to inform decision-making.

5. **NEPA / Planning Institute of Jamaica (PIOJ) -** Develop a concept note and plan (maximum two-years) to secure funding for a IWRM bridge project that will facilitate transition from the Y-H Project to a long-term programme. The bridge activity will provide a frame for implementing immediate next steps post-project (e.g. building high level capacity for the PES), while establishing the structures for the longer-term sustainability plan. The following are key actions to move forward:
    a. Develop a concept proposal that packages some key activities that shares a vision that sustains continuity to Y-H Project outcomes in the WMUs based on the PDO and other national IWRM priorities.
    b. Use this package to sell the concept to the target group, ensure the projected impacts of the initiative are well articulated, financially. Utilise key project documents such as the information provided from PES design.
    c. Lobby MOFPS and identified champion Minister (s) to secure government priority and budgetary allocation for long term management of WMUs, starting with a commitment to the strategic plan for the Y-H Programme.
    d. Mobilise a small project implementation team (2 persons) to coordinate the planned activities, for example:
        i. High level capacity for the PES through sensitization sessions and additional technical exchanges involving Ministers, select Permanent Secretaries, and other agencies like PIOJ, and the GEF FP among others,

[7] 10-year

ii. Creating linkages with other IWRM or sustainable financing projects,
iii. Develop other models (diversified streams) for sustainable financing for IWRM.

e. Establish the structures for longer-term IWRM programme sustainability in the WMUs (e.g., governance arrangements, M&E system and plan, alignment with Vision 2030 MTF, integration in key agencies' corporate and operational plans).

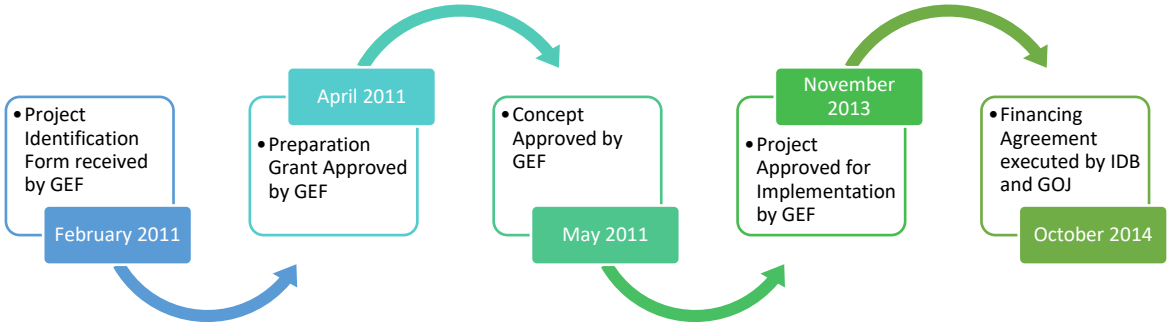
6. **NEPA / GOJ** Utilise the lessons learned from the Y-H Project and other IWRM initiatives to define an updated framework for watershed governance, designed to move from opportunistic projectized initiatives to a cohesive long-term cross agency approach to addressing issues in the WMUs, informed by data on economic and social values. The following are essential actions:
   a. Agree on a multi-tiered governance arrangement that should include:
      i. A high-level Program Management Committee involving strategic level stakeholders (consider the NIWRMC as it involves Heads of Agencies of relevant MDAs)
      ii. A second tier Technical Advisory Body (TAB) for all matters technical.
      iii. A projects unit that is housed within a lead implementing agency for example NEPA.
      iv. *Ad hoc* special committees to address focused thematic areas, as needed.
   b. Drive the Policy Dialogue with Cabinet Office and the Public Sector Modernisation Unit (public sector reform) to support integrated watershed management utilizing a joined-up government approach that epitomizes true coordination among watershed agencies.
   c. Sign-off and incorporate coordinated implementation of the WAMM as a mechanism that puts the policy directives and lessons learned into practice.
   d. Expand the utilization of financial/economic models to bring the valuation of ecosystem services into national public accounts/accounting and environmental decision making.

7. **GOJ -** Build a cross-agency cadre of project management specialists situated within core GOJ agencies available to support mobilization and implementation requirements of donor funded projects. Equip the specialists to cover critical areas such as project performance monitoring and evaluation, and government and donor procurement planning and management.

I. Introduction and Background

1. **In February 2011, the Government of Jamaica (GOJ), through the Inter-American Development Bank (IDB), applied to the Global Environment Facility (GEF) for financing to support sustainable and coordinated management of the Yallahs and Hope River Watershed Management Units (WMUs)**. The GEF approved a Project Preparation Grant (PPG) of US$151,400 in the same year to facilitate the conduct of necessary studies and assessments that provided the critical foundation and a roadmap for project implementation. The project received GEF approval in November 2013 (Figure 1).

Figure 1: Timeline of activities from concept to agreement

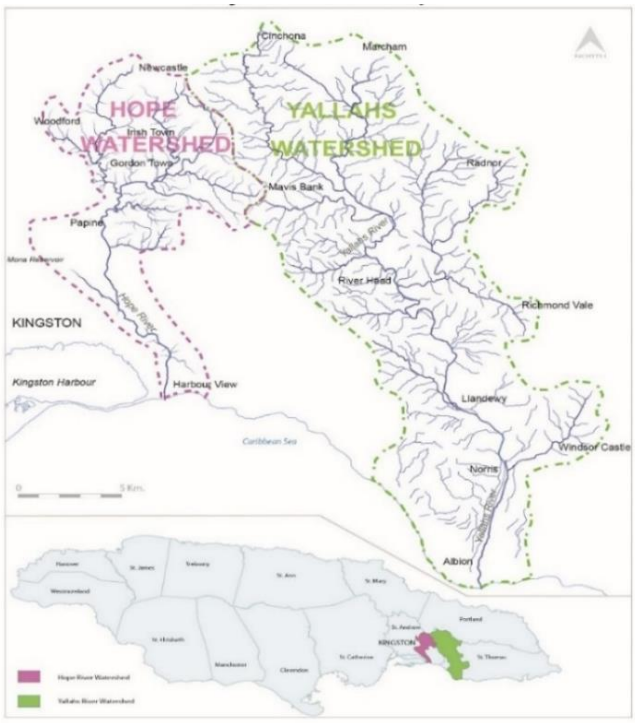


A. Project Financing, Objective and Components

2. **In October 2014, the GOJ and the IDB, in its capacity as GEF Implementing Agency, executed the non-reimbursable Financing Agreement (FA) GRT/FM-14607-JA to implement the "Integrated Management of the Yallahs and Hope River Watershed Management Areas" project (Y-H Project– GEF ID- 4454) over five years**. Execution of the GEF-financed Y-H Project was led by the National Environment and Planning Agency (NEPA), on behalf of the GOJ. In June 2019, the IDB approved a request for the project's Terminal Disbursement Date to be extended to October 31, 2020.

3. **The primary objective of the Y-H Project was to improve the conservation and management of biodiversity and the provision of ecosystem services in the Yallahs and Hope Watersheds** (FA, 2014). This Project Development Objective (PDO) is intended to contribute to the reduction of the pressures and threats to the natural resources in the Yallahs River and Hope River WMUs (Figure 2), by increasing the practice of sustainable land management (SLM), and, thereby, resulting in the improved management of biological diversity and enhanced flow of ecosystem services that sustain local livelihoods.

Figure 2. Geographical representation of the Yallahs River and Hope River WMUs



Source: PSC presentation, NEPA 2015

4. **To achieve its PDO, the Y-H Project was allocated a total approved budget of US$12,781,798 of which US$3,909,441 is grant funding from the GEF and US$8,872,357 is co-financing from the GOJ**. Most of the project budget is distributed across three technical components (Table 1), each with its own objective and outputs (Table 2). Of the total budget, 11% was allocated for Component 1, while 17% and 64% were apportioned for Components 2 and 3, respectively. The remaining 8% was allotted for project management, monitoring and evaluation, and financial audits.

Table 1: Breakdown of Project Financing for the Y-H Project

Description	GEF Contribution (USD)	GOJ Co-financing (USD)	Total (USD)
Component 1. Institutional strengthening and capacity building for incrementing biodiversity into watershed management	572,400	881,097	1,453,497
Component 2. Creating economic and financial incentives to support sustainable biodiversity and watershed management	415,500	1,735,903	2,151,403
Component 3. Implementing sustainable livelihoods, agriculture and forestry in watershed communities	2,521,541	5,644,730	8,166,271
Management	300,000	610,627	910,627
Monitoring and Evaluation	50,000	0	50,000
Audit	50,000	0	50,000
Total	**3,909,441**	**8,872,357**	**12,781,798**

Source: FA, 2014

Table 2: Description of Project Components

Component	Component Objective	Outputs
Component 1: Institutional strengthening and capacity building for integrating biodiversity into watershed Management.	Address some of the main institutional weaknesses, including policy formulation, data gathering and processing capabilities, and low capacity for implementing and enforcing policies that support a more Integrated Water Resources Management (IWRM).	(i) Memorandum of Understanding (MOU) – this MOU provides a framework for cooperation among partners until watershed policy is finalized. (ii) Monitoring protocols and data collection. (iii) Geographical Information Systems (GIS)-based Decisions Support System (DSS) for both watersheds. (iv) Training of government & Non-Governmental Organizations (NGOs) staff involved in management of the WMUs. (v) Communication plan and public awareness campaign.
Component 2: Creating economic and financial mechanisms to support sustainable biodiversity and watershed management.	Address the lack of financial resources and incentives to promote the adoption of conservation and sustainable management activities in these watersheds.	(i) Valuation of ecological services. Two basic studies: a. The first - a detailed study of the hydrological impacts on water flows and sediment content of different types of agro-ecological practices and reforestation on the WMUs. b. The second – assessment of the willingness of the population in Kingston and nearby areas to pay for the environmental benefits provided. (ii) Design and implementation of the financial and legal arrangements required for the Payment for Environmental Services system (PES) scheme.
Component 3: Implementing sustainable livelihoods, agriculture and forestry in watershed communities.	Finance activities of the Forestry Department (FD), Rural Agricultural and Development Authority (RADA) and NEPA to increase public awareness of the importance and benefits of sustainably managing biodiversity and to increase the areas in which good practices for land, agro-forestry and forestry management are used through the use of pilot projects.	(i) Extension Programme designed – knowledge attitude practice (KAP) surveys will inform the Programme. (ii) Capacity development for communities. (iii) Implementation of demonstration projects.

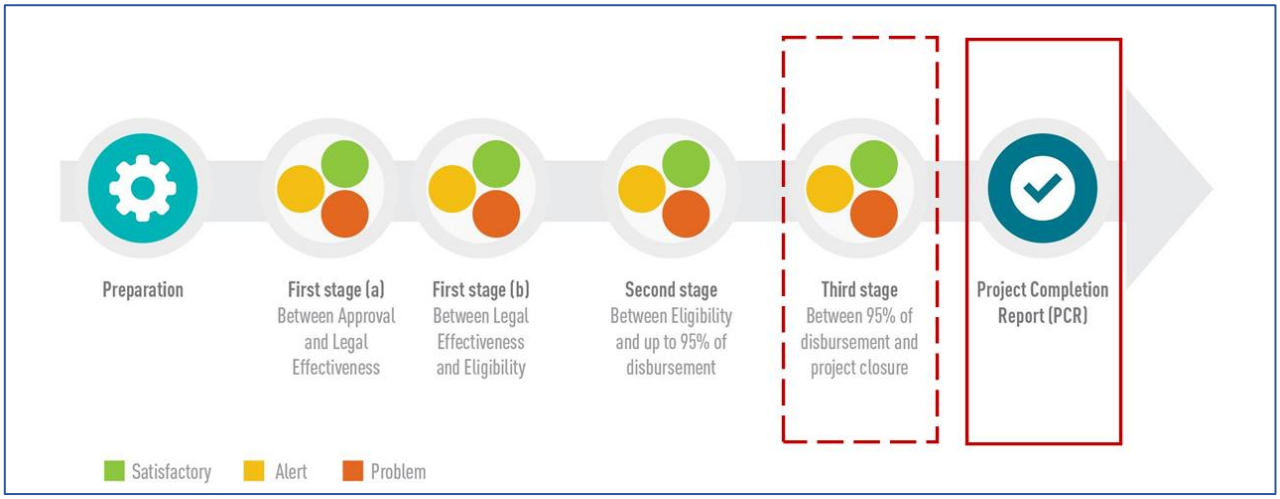
Source: FA, 2014

B. The Y-H Project Terminal Evaluation

5. **Based on the IDB's project lifecycle, the project is in its *Third Stage*, which is between 95% of disbursement and project closure (Figure 3). Consequently, and in keeping with its obligations under the FA (2014), the Executing Agency (EA), NEPA, has commissioned a final evaluation to determine the extent to which the project has achieved its objectives.** This report presents the main findings arising from the terminal evaluation (TE) exercise that assessed project performance and the likelihood of the project achieving its intended objectives, outcomes and impacts as defined in the Terms of Reference (TOR) in Annex 1 and importantly, responds to the GEF Guidelines on the Project and Program Cycle Policy (2020) (GEF Guidelines). Lessons learned

and good practices from project implementation were also examined and are documented in this report to support learning and knowledge transfer, whether for future programming in the Y-H WMUs; scale up and replication in other Jamaican WMUs or more broadly for learning and potential application to similar projects being designed elsewhere. The TE also presents recommendations that are expected to guide future similar initiatives in the WMUs.

Figure 3: Project Status in IDB Life-Cycle

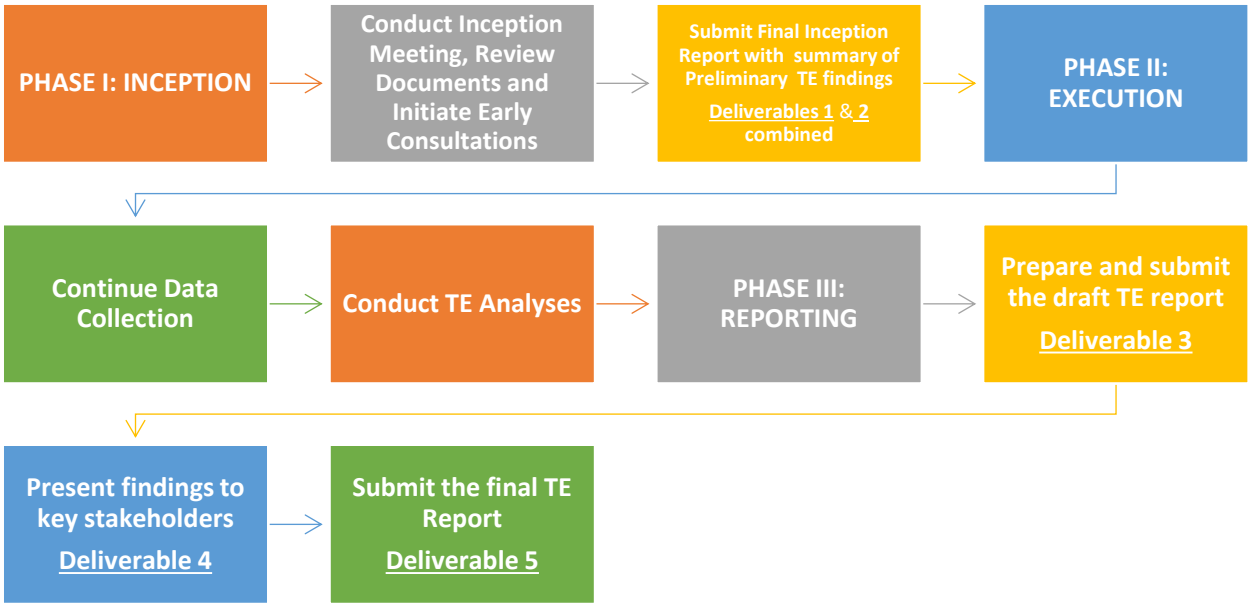


The first stage is divided in two lapses: (1) The first refers to legal effectiveness which relates to the signing of the contract between IDB and the host country. Sometimes this is done at the level of the executive power, and for other countries it also includes congressional retification. (2) Reaching eligibility involves meeting a number of conditions as they have been established contractually. Often, they relate to how the executing agency is set-up to implement the project. Once conditions are met, the projects becomes eligible to disbuse.

II. Approach and Methodology

6. **The TE utilized a mixed-methods approach with high value placed on understanding reasons behind performance and impact—or lack thereof—as well as lessons that will provide a basis for recommendations going forward.** The evaluation utilized a combination of qualitative (semi-structured interviews, surveys, observations, and documents) and quantitative data (project records) data. Several TE analyses (Annex 2) complemented the data collected and collated. Figure 4 outlines the defined TE process and associated tasks in three distinct phases, which are aligned to various milestones and deliverables. Annex 3 provides the list of stakeholders consulted and Annex 4, photographs from sites visited.

Figure 4: Process utilized for the Y-H Project TE

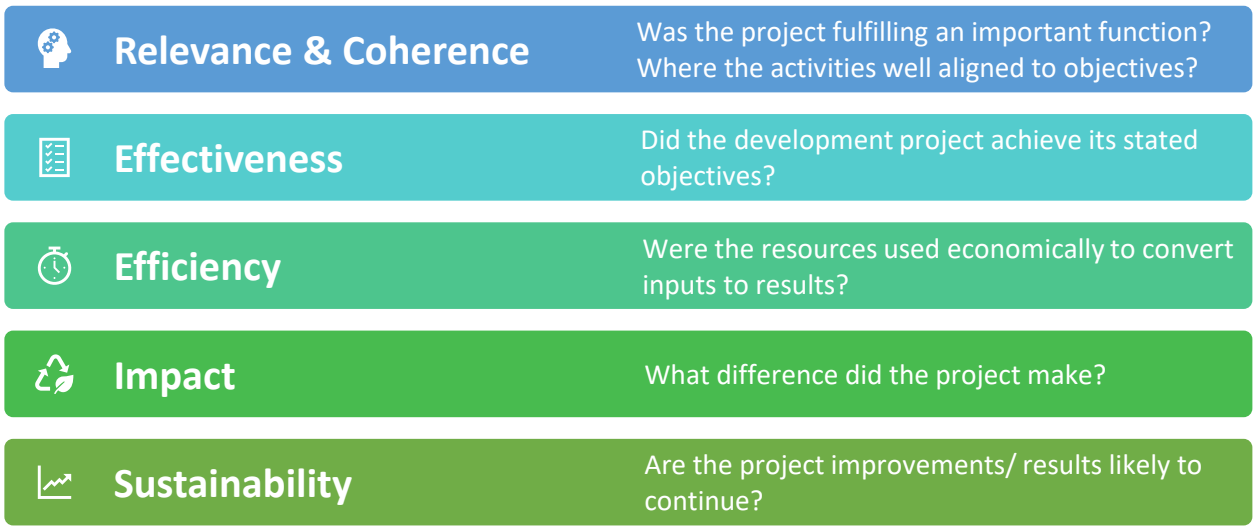


7. **The TE utilized a process of triangulation[8] to facilitate validation through cross-verification**. These methods were used to corroborate findings and draw conclusions using five core evaluation criteria (Figure 5). The TE produced the following deliverables: an Inception Report that included the workplan and preliminary TE findings; followed by primary data and information collection; the draft TE report that includes key findings, lessons learned and recommendations to enhance project performance where necessary and relevant; a stakeholder validation workshop; and the final TE report. The TE was implemented over the period July – October 2020, and with the COVID-19 restrictions, had to be adjusted with more remote

[8] This involved a comprehensive review of over 1,000 project and other pertinent documents; training, Technical Working Group (TWG) and Project Steering Committee (PSC) surveys administered online; over 62 in-depth individual interviews (guided by a stakeholder analysis); and site visits to farms, a Water Resources Authority (WRA) hydrometeorological station, and FD reforestation sites.

consultations. Access to data sometimes posed a problem and resulted in some delays in completion.

Figure 5: TE evaluation criteria and associated evaluation questions



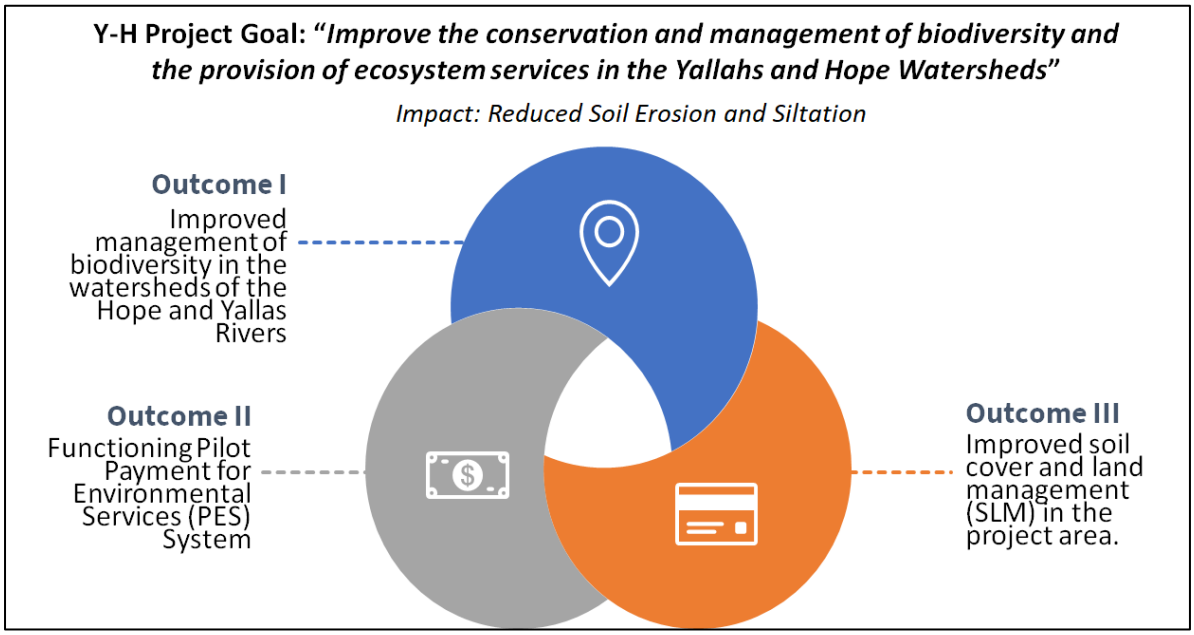
III. TE Findings

8. This section of the TE Report presents the findings that respond to the requirements of the GEF (GEF Guidelines, 2020), and the GOJ, for adherence to its FA (2014) with the IDB, GEF Administrator (Annex 1). The findings are presented in five main areas of focus: Relevance and Coherence; Effectiveness; Efficiency; Impact and Sustainability and these are ranked using the GEF Rating Tool[9] (Section IV).

A. Relevance and Coherence

9. **To achieve the desired impact of "*Reduced Soil Erosion and Siltation*" the Y-H Project design proposed a mix of activities focused on policy and practice that produced outputs, all expecting to contribute to one or more of the project's three main outcomes.** The defined outcomes of the Y-H Project are featured in Figure 6.

Figure 6: Y-H Project Outcomes



A.1. Relevance of Design

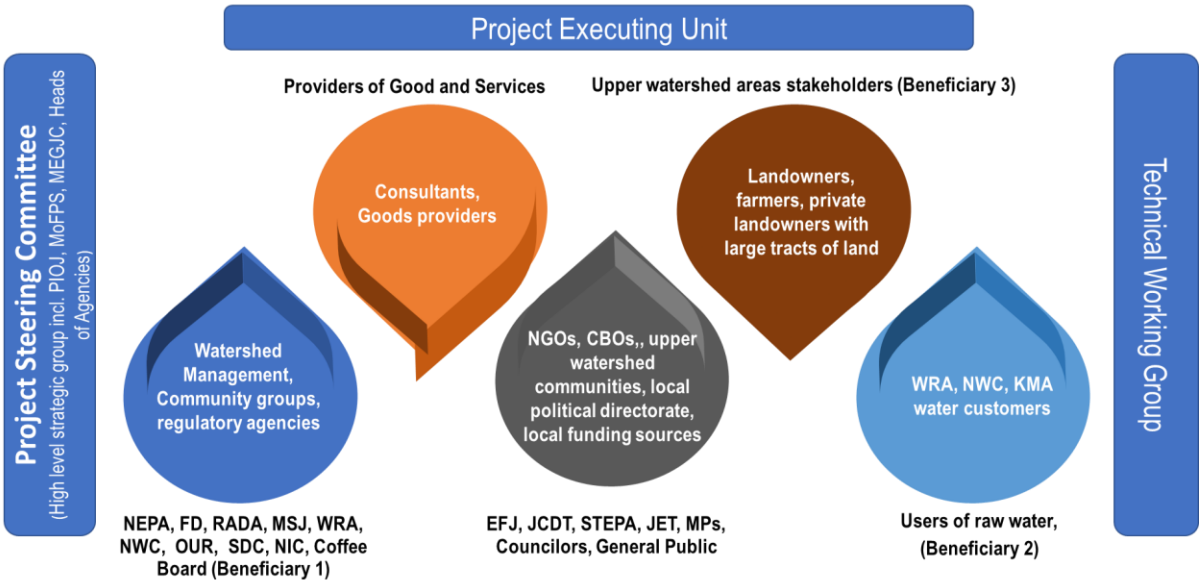
10. **The Y-H Project aligns with Vision 2030 Jamaica- National Development Plan and the two Medium Term Socio-Economic Policy Framework (MTF) documents that spanned the life of project (LOP). The Y-H Project is also well-aligned to its EA and key technical implementing agencies' (TIAs) policies, plans and programs**. Its watershed management activities span the breadth of organizational mandates and programs of these agencies, further highlighting the importance of integration and inter-connectedness of watershed management.

[9] Defined in the GEF Guidelines (2020)

11. **The project is consistent with the GEF Biodiversity, Land Degradation and Sustainable Forest Management REDD-Plus objectives. It is also well-aligned with the IDB's Lending Plan, Strategic Plan and Regional Development Goals, as well as its Country Strategy for Jamaica, spanning the time from design to implementation and closure (2010-2020).** Project activities addressed IDB Country Strategy priority sectors of interest and over-arching GEF objectives.

12. **The project was designed to be different from the *status quo*, utilizing a multi-stakeholder, multi-agency, collaborative IWRM approach, where activities were to be implemented in a coordinated, cooperative and integrated way.** There was no evidence of a thorough stakeholder analysis at design; nonetheless, stakeholders identified were reflected in design documents and the Inception Workshop/Launch Invitation list (2015). Stakeholders included Ministries, Departments and Agencies (MDAs) with mandates for: water and watershed management, community development, and regulatory functions; community based organizations (CBOs); potential/identified beneficiaries; external experts and providers of goods including equipment and seedlings, which are highlighted in Figure 7 and detailed in Annex 5.

Figure 7: Yallahs-Hope Project stakeholders identified at design[10]



13. **The Y-H Project intervention strategy was found to be logical with a mix of strategies that worked at multiple levels to address several drivers of watershed degradation in a focused program. The project strategy was found to be sound and coherent, with a clear path to meet**

[10] MOFPS – Ministry of Finance and the Public Service; MEGJC -Ministry of Economic Growth and Job Creation; SDC – Social Development Commission; NIC – National Irrigation Commission; NWC – National Water Commission; OUR – Office of Utilities Regulation; EFJ – Environmental Foundation of Jamaica; JCDT – Jamaica Conservation and Development Trust, STEPA - St. Thomas Environmental Protection Agency; JET – Jamaica Environment Trust; MP – Member of Parliament.

its PDO. Conceptually, the Y-H Project was designed with appropriate interventions that addressed Jamaica's development needs using strategies that integrated stakeholders and solutions to generate benefits (Table 3).

Table 3: Y-H Project beneficiaries' challenges and expected benefits

Beneficiary	Development Challenges	Expected Benefits
Public agencies (NEPA, RADA, FD, NWC, WRA, MSJ) involved in the management of the two WMUs	a) **Low technical knowledge** on PES development and implementation elements of implementing partners b) Limited availability of **scientific information and data** to inform resource management decisions c) Tenuous **institutional relationships** and overlapping policy mandates	• Strengthened policies and programs • Improved data availability and technical know-how of watershed managers • Improved coordination and collaboration among technical agencies
NWC and the residents of the Kingston Metropolitan Area (KMA)	a) **Low levels of knowledge** on the value of clean water and the **cost to maintain** this environmental good b) **High cost of accessing water** from alternative sources during NWC service disruptions[11]	• Reliable supply of clean water • Increased watershed integrity for the two WMUs (biodiversity conservation, increased forest cover, improved ecosystems health)
Farmers and large land owners located above the NWC water intakes on the two watersheds that will continue to receive information and financial incentives to implement soil conservation and improved agricultural practices as a result of having a strengthened extension service and financial resources provided by the PES.	a) Absence of **sustained financing** for conservation and environmental management b) **Low awareness** of the interconnectivity between user actions and water availability and quality c) **Low productivity** of subsistence farming d) Low levels of knowledge of sound resource management techniques by farmers and watershed users e) Current use of **poor land management and environmental practices** that lead to environmental degradation	• New and sustained mechanisms for conservation financing to support biodiversity conservation and SLM practices in the upper watershed areas via the PES and complemented by commitments through government budgetary allocation • Increased investments in, and sustained application of, Good Agricultural Practices (GAP) and improved SLM best practices • Strengthened extension services for farmers
Wider public	a) **Low awareness** of the importance of watersheds.	• Improved understanding of watersheds, watershed management and their relationship with the supply of water • Transformed attitudes to the value of ecosystem services through sensitization and public awareness interventions

14. **In examining the vertical logic prepared at design that expressed the relationships among activities, outputs, outcomes and the desired impact (across the three intervention areas), most of the planned activities were found to be adequate to produce the desired outcomes.** The project's funding, technical assistance and mobilised partnerships would be used to

[11] In 2020, the rate is J$12 – J$25 per gallon using alternative sources compared to approximately J$4 per gallon from NWC.

implement a mix of activities that led to change in knowledge, attitudes and practices of watershed users – especially farmers, that would lead to long-term changes in the environmental quality of the WMUs and the resource dependent livelihoods (as detailed in Box 1 and represented graphically in Annex 6).

Box 1: Y-H Project Logic Summary Narrative

The Y-H Project will "*improve the conservation and management of biodiversity and the provision of ecosystem services in the Yallahs and Hope Watersheds*", having utilized the financial resources provided by the donor, the host government, and local counterparts; the technical expertise of its Technical Implementing Agencies (TIAs), the National Environment and Planning Agency's (NEPA's) technical expertise in watershed management and project management and proprietary training approaches and curriculum to implement a range of interventions across the two Watershed Management Units (WMUs). When this objective is achieved there will be reduced soil erosion and siltation in the two targeted WMUs.

If the project effectively reduced soil erosion and siltation, the project would have successfully:

a) Supported its TIAs to improve the enabling environment for biodiversity and watershed management. The improved enabling environment would have been achieved:
   - if the NEPA completed the updates of development orders for the parishes within which the WMUs reside to consider sustainable land management (SLM) and the delivery of water services and if the updated orders were used to guide all new planning approvals in the watersheds.
   - if the updates to the watershed policy were completed to the white paper stage, if the Watershed Area Management Mechanism (WAMM) is accepted by TIAs and used to plan, implement and monitor interventions in the WMUs, technical assessments were completed and the Geographical Information System (GIS)-Decision Support System (DSS) functional and in use by relevant agencies for watershed decision making, equipment were procured and installed to improve water and meteorological monitoring and if these improvements were being used by stakeholders to guide the implementation of future watershed management efforts in the two WMUs and nationally.
     Assumptions – planning permission is sought for land management changes in the watershed; the monitoring data and information are up to date, accessible and used by watershed managers; all stakeholders are in agreement with and Cabinet accepts the update/revision to the policy

b) Piloted a Payment for Ecosystem Services (PES) system that if functioning would mobilize financial resources from Kingston Metropolitan Area (KMA) water users that would be used to engage farmers and landowners to plant trees that if established will improve soil cover and water quality, and reduce soil erosion:
   - if the designed and implemented PES mobilizes the financial resources to contract farmers and landowners in the upper watershed (financial incentive); and
   - if the farmers and landowners plant and maintain trees (fruit and/ or timber) leading to the scaled up application of the SLM practices that not only improve their livelihoods but improve the ecosystem services (improved water quantity and quality)
     Assumptions – Water users in the KMA are willing to pay farmers and other landowners to maintain the watersheds in order to secure consistent flow; there is political will to implement a PES system

c) Worked with farmers and landowners to improve the soil cover and reduce land degradation in targeted locations in the WMUs:
   - If the Forestry Department (FD) planted and maintained timber trees in degraded forested areas,
   - If farmers learned and applied the Good Agricultural Practices (GAPs) on their farms that will improve soil cover (e.g. agroforestry) and/ or reduce the movement of soil through physical or vegetative barriers.
   - If other farmers and landowners replicated the GAPs on other farms across the watersheds
     Assumptions – Farmers will adopt the best practices learned from the technical training; farmers are willing to accept the incentive provided.

A.2. Project Design Modalities for Implementation

15. **The project was designed with a multi-modal implementation framework that sought to utilize and strengthen existing capacities, capabilities and relationships among watershed agencies while securing expertise not readily available within the identified stakeholder institutions and groups.** This was done with the aim of implementing a project that was unique in its inter-connectedness and implementation of a novel long-term finance mechanism for IWRM. The implementation modalities listed in Table 4 are consistent with the needs of, and requirements for supporting IWRM in the Yallahs and Hope Rivers WMUs and utilize adaptive management in their execution. The approaches and components of the project seek to address gaps in and challenges associated with IWRM, including a sustainable source of financing and incorporation of biodiversity considerations in IWRM policies, among other things.

Table 4: Y-H Project design methods and approaches and their relevance

Project Objective	Component	Methods and Approaches	Factors contributing to relevance to the sector and targeted beneficiaries and consistency with overall project outputs, results and intended impacts
Improve the conservation and management of biodiversity and the provision of ecosystem services in the Yallahs River and Hope River WMUs.	Institutional strengthening and capacity building for Integrated Biodiversity and Watershed Management	Consultants – short-term technical assistance assignments	• Conduct surveys and assessments to inform project activity focus • Help fill gaps in limited technical knowledge and plan appropriately for meeting project objectives • Plan for long term direction for IWRM with strengthened policies, plans and programmes
		Acquisition of equipment and tools (water quality monitoring, computer hardware and software)	• Build on capacity for analysis for more informed decision making • Enhance data gathering and processing capabilities
		Capacity building/training	• Important for knowledge transfer • Builds relationships among watershed management entities • Foster cooperation and collaboration • Enhance national capacity
		Appropriate media for dissemination	• Build awareness among watershed stakeholders
		Partnership Agreements (MOUs)	• Enhance coordination and collaboration among key watershed management entities • Improve data and information sharing and carry out more robust decision making • Implement watershed actions in a focused way
	Creating economic & financial incentives to support	Studies (valuation of ecological services-hydrological impacts on water flow, willingness to pay study)	• Inform development of the PES • Understand importance of water services for water users • Inform future needs for next phase PES implementation and broader IWRM actions

Project Objective	Component	Methods and Approaches	Factors contributing to relevance to the sector and targeted beneficiaries and consistency with overall project outputs, results and intended impacts
	biodiversity & IWRM	Planning (design of the PES- financial and legal arrangements)	• Establish norms and procedures for implementation of financial mechanisms
	Implementing sustainable livelihoods, agriculture, and forestry in watershed communities.	Capacity development/training	• Enhances the adoption and adaptation of technologies and techniques (Farmer Field Schools (FFS)) • Important for technology and knowledge transfer (land husbandry techniques, fire prevention and management) • Build relationships in community groups and wider communities • Build relationships between GOJ entities and communities
		Public-Private Partnerships (engagement of private landowners; Alternative Livelihoods, Agriculture and Forestry (ALAF) Working Group)	• Increase opportunities for adoption and for improving SLM in watersheds with multiple benefits of increasing productivity, improving livelihoods, enhancing water quality and quantity and conserving biodiversity • Joint planning and decision making
		Contractual services from government agencies	• Allow for efficient execution of on-the-ground project activities • Provide autonomy for TIAs
	Management Coordination	Project Steering Committee	• Provide oversight, direction and decision-making multi-agency body
		Technical Working Group	• Provide technical backstopping for the project, including reviews of technical approaches, documents, consultants' deliverables
		Project Executing Unit (PEU)	• Coordination and administration of day-to-day activities • Secretariat for Project Steering Committee (PSC) and Technical Working Group (TWG)

16. **While the Project benefited from an extensive and robust design process that laid the foundation for optimal implementation, a graphic representation of the roadmap that emphasized ideal sequencing for IWRM activities essential to achieving results was not available as a guide to implementation. This guide would have been essential to partners' understanding of the common vision and facilitate coordination and collaboration** Timely synchronization of approaches and logical sequencing of activities were to provide for enhancement of IWRM practices that support achievement of the PDO**.** It was assumed, for example, that the pre-feasibility hydro-meteorological (hydro-met) study would inform (i) the communications and public awareness plans for the project (which would also be informed by a pre-project baseline Knowledge, Attitudes, Practices and Behaviour (KAPB) assessment to be conducted at start-up); (ii) design of the PES mechanism; (iii) placement of hydro-met

equipment for long term monitoring; (iv) requirements for comprehensive monitoring in the watersheds linked to decision making in a GIS-DSS; and (v) improvement of livelihoods, agriculture and forestry practices in the upper watershed areas.

A.3. Design Process and Quality

17. **Project design involved an elaborate, complex process that produced a package of project documents, by a team of external experts[12] and IDB personnel, working with the identified TIAs, commencing in 2011 with an approved Project Identification Form (PIF) (2011).** The design consultancy and IDB teams produced a set of at least twelve important documents, that along with the FA (2014) is the basis for implementation of the Y-H Project (Figure 8). The *process* (Box 2) was constrained by slow pace of data and information sharing and identification of co-financing support from partner and other agencies and was completed in 2013, when the project received approval from the GEF in September of that year. The *products* were a set of detailed design documents that included the POD (2013) and other documents listed[13] in Figure 8 that indicated where activities needed to be interlinked.

Box 2: Design Process

Design process included:

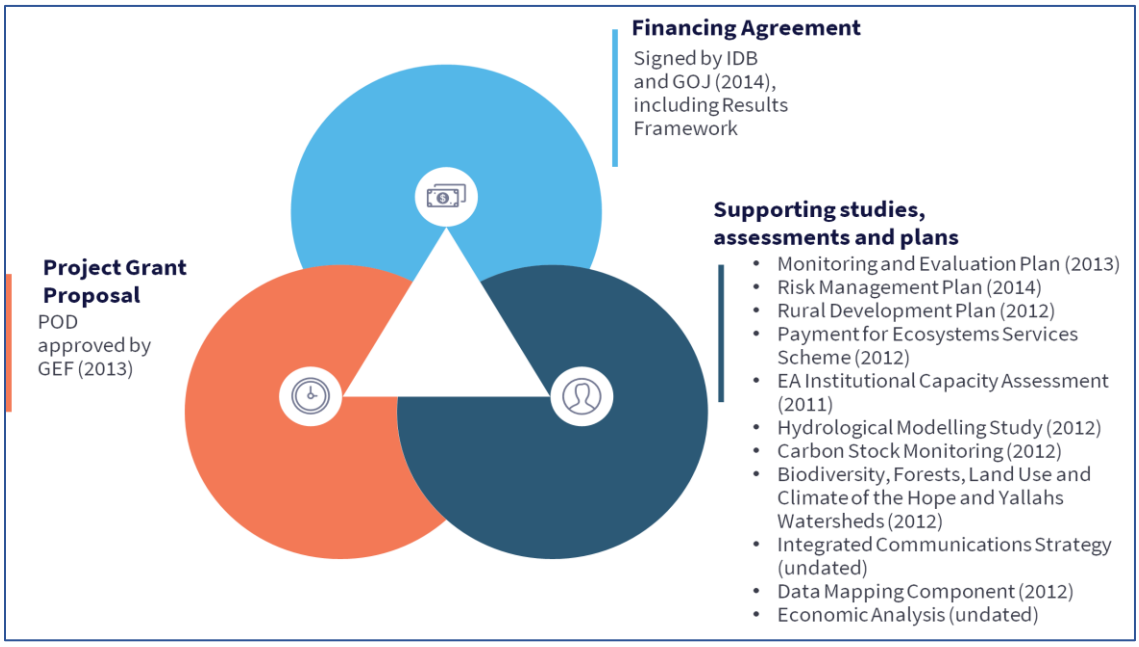
1. Defining what the TIAs were capable of doing, additional to their core areas of work and what requisite capacity would be required.
2. Matching the extent of work of the TIAs with the available budget, while ensuring that the project could achieve its objectives, outcomes and outputs.
3. Determining best-fit EA with strong project management capacity.
4. Understanding the extent to which TIAs had a history of working together and could collaborate.
5. Allocation of funds across the three components, that balanced the activities for implementation while acknowledging the areas that required more support, i.e. PES design and changing land cover.
6. Receiving commitment for co-financing that would be acceptable by the GEF from the TIAs.

(*D. Smith, Design Team Lead, 2020)*

[12] A team of local and international consultants with expertise in project management, economic analysis, hydrometeorology, communications, socio-economics, biodiversity, forestry, agriculture and carbon stock monitoring (CSM).

[13] The TE made every possible attempt to compile documents produced at design, but the absence of a solid archiving system from design, both within the IDB and the GOJ, into implementation, makes it likely that other documents may not have been included.

Figure 8: Project supporting documents produced at Design and Agreement



18. **An assumption made by the end of design was that stakeholders understood both the processes and the contents of documents sufficiently well to be able to translate them into a solid strategic and operational plan at implementation.** In addition to developing the full grant proposal (POD, 2013) the design team also developed supporting assessments and documents that importantly, defined activities to be executed and the systems and processes that needed to be established and utilized for smooth implementation (Figure 8). Annex 7 provides detailed analysis of each of the design documents and identifies linkages with implementation steps. Design phase Aide Memoires indicate key stakeholder participation in review of design documents, development of project implementation strategy and institutional arrangements, agreement on component and activity responsibilities and agreement on the GEF CEO Endorsement document (GOJ, 2013). The Project Operating Manual (POM) was later developed as one of two conditions for first disbursement in 2015 and included operational level requirements and expectations. The POM was revised[14] in 2016 and later again in February and August 2018.

[14] Although the document was approved in 2013, it remained incomplete until its next revision in 2016, then February and subsequently August 2018. There is no evidence of further approval to the document beyond that received in 2013.

19. **Although stakeholders were engaged in design, the quality of their participation varied throughout the design process. More involved participation in the process and understanding of the products developed would have served a dual role of securing buy-in and ownership from the partners while also building their capacity and readiness for implementation.** The involvement of the TIAs in the design process included activity and budgetary alignments, provision of data and information for the supporting assessments, activity projections, development of implementation strategy and institutional arrangements, assignment of responsibilities and discussions towards finalization of GEF CEO endorsement document (GOJ, 2011-2013) Due to the absence of an adequate archival system the extent of stakeholder involvement in implementation planning, identified as a design step in a January 2013 Aide Memoire (IDB, 2013) was unclear. TE consultations also revealed that there were TIAs that did not receive the final POD and supporting documents that were submitted to the GEF. A logical next step post-design and GEF approval would have been for the TIAs to mainstream the design activities in their own organizational plans, including ensuring that any supporting tasks for different divisions were also incorporated in the plans, and an internal coordination strategy established. For example, the extension programme included not just work in the communities but also a well-defined monitoring regime, for which other parts of the agriculture ministry were expected to be engaged. This major step would have also reflected ownership of the project and its activities.

A.4. Project Assumptions at Design

20. **A set of design assumptions was used to guide development of approaches and methodology and helped to determine resource requirements for project implementation, some of which could be considered faulty and others did not hold true in implementation**. Although project assumptions at design were not always documented, Box 3 provides a non-exhaustive list of wider project assumptions used at that time and upon which the project strategy and activities were developed. Specific assumptions (Annex 8) guiding the Component 3 extension programme (Smith, 2012) were related to a multi-agency core team; use of the first of three KAPB studies, which would constitute the baseline; communication messaging; involvement of women; and farmer-to-farmer learning.

Box 3: Key Assumptions Underpinning the Y-H Project's Design

1. Technical implementing agencies (TIAs) were already collaborating and cooperating and in instances were upscaling activities they had already implemented successfully together.
2. TIAs have sufficient capacity (personnel and time) to lead and guide implementation.
3. TIAs would mainstream project activities as these would eventually be long term.
4. There is understanding of how, in practical terms, the different components and supporting activities integrate and are inter-linked in order to achieve the desired outputs and outcomes.
5. The National Environment and Planning Agency (NEPA) recognizes its role, not only as Executing Agency (EA), but also as a key TIA and its responsibilities in this regard will be clearly defined and formalized. Efforts to ensure internal coordination between the PEU and NEPA divisions are imperative.
6. The Project Executing Unit (PEU) will be adequately staffed, with both technical and administrative support from the EA, NEPA.
7. The EA and other agencies have the requisite capacity with the support of the IDB to allow for procurement functions to be undertaken in a timely manner.
8. Expertise to support project implementation was available locally, regionally or internationally and were accessible.
9. The expertise can be harnessed with the available finances.
10. Farmers have some tenure security or land use rights that allows them to attempt new techniques for a period long enough to recover investment costs.
11. Farmers will adopt the best practices they can see on fields in nearby areas with similar conditions.
12. Lower watershed users are willing to pay to access improved ecosystem functions such as better (less siltation) and more constant water supply.
13. There will be sufficient replication of Sustainable Land Management (SLM) practices to offset current degradation trends.
14. Implementation timeframes allow the full cycle of interventions to be completed and needed program adjustments integrated (e.g. replanting program, and timing of the hydro-meteorological assessments).
15. Monitoring, evaluation and learning will be appropriately formalized and mechanisms formulated for tracking throughout the life of the project.
16. Preparatory phase assessments are adequate to guide execution and Partnership Agreements and silviculture plans are negotiated prior to project implementation.

B. Effectiveness

21. **At end of project (EOP), the Y-H Project achieved an average of 39% of its impact level, 60% of its outcome level, and 97% of its output level results projected in its RF**. Annex 9 provides the combined EOP achievements for all Y-H Project indicators, which are further elaborated in sections below.

B.1. Achievement of RF Results

B.1.1 Impact Level Achievements

22. **The Y-H Project did not achieve the targets set for its two impact level results measured by indicators *I1.1 - Sedimentation in waterways and I2.1 - Tons of carbon sequestered* as 56% and 21% of the targets were achieved respectively.** For *I1.1* five of nine planned stream flow gauges were installed (Table 5) at key locations in the WMUs through the partnership with the WRA. For *I2.1* the finding from the EOP carbon stock monitoring (CSM) assessment (Cifuentes, 2020) showed some increase in carbon sequestered of 38517 Mg CO2e vis-à-vis the 2013 baseline value of 1881 Mg CO2e, which also reflects improvements in the vegetation cover of the watershed (Table 5 and Annex 10).

Table 5: Y-H Project Impact Level EOP Achievement

Specific Objectives/Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
Impact No. 1: Reduced soil erosion and siltation in both watersheds						
I1.1 Sedimentation in waterways	Gauges	0	2013	P	0	56
				P(a)	9	
				A	5	
I2.1 Payment for Environmental Services (PES) system functioning at NEPA	Mg CO2e per annum	1881	2013	P	0	21
				P(a)	187,495	
				A	38,517	

B.1.2 Outcome Level Achievements

23. **The Y-H Project was successful in achieving 60% of its target for outcome level indicators, having achieved 100% of the targets for both Outcome 1 indicators, 100% of the Outcome 3 indicator target and none of the Outcome 2 indicator targets.** The target for both Outcome 1 indicators - *O1.1: Watersheds covered by development orders that include land cover and soil management (SLM) and O1.2: Agencies updating data in DSS (Decisions Support System) according to agreed protocol* was met. Development Orders (DOs) for the parishes of Kingston & St. Andrew and St. Thomas were updated and are now in provisional[15] stage. The GIS-DSS system design was also completed and five partner agencies trained. Table 6 provides details on the indicators reported and progress achieved. No results were achieved for *Outcome 2: Functioning pilot PES system*. Both associated indicators *O2.1: Area under contract* and *O2.2: Contracts signed* could not be measured at EOP. Under *Outcome 3 "Improved soil cover and SLM in project area"* the project achieved its greatest impact in the

[15] A Development Order is a legal document that sets out the framework, guidelines and policies for planning and development in parishes and communities. The provisional order is confirmed after the expiration of the period during which notice of objection may be given.

two WMUs through the efforts of FD, RADA, the Jamaica Fire Brigade, farmers and other landowners. The project successfully implemented land management best practices and agroforestry innovations on 512 hectares of farmlands and 52 hectares of forested areas in the WMUs and with the support of complementary activities[16] leveraged from co-financing partners –PIOJ and the Forest Conservation Fund (FCF) achieved 100 % of the performance target (PEU 2020; Annex 11).

Table 6: EOP Results for Y-H Project Outcomes

Specific Objectives/Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
Outcome No. 1: Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers & the Blue and John Crow Mountains						
O1.1 Watersheds covered by development orders that include land cover and soil management (SLM)	Percentage	0	2013	P	0	100
				P(a)	80	
				A	80	
O1.2 Agencies updating data in DSS (Decisions Support System) according to agreed protocol	Agencies	0	2013	P	0	100
				P(a)	5	
				A	5	
Outcome No. 2: Functioning pilot Payment for Environmental Services (PES) system						
O2.1 Area under contract	Hectares	0	2013	P	0	0
				P(a)	100	
				A	0	
O2.2 Contracts signed	Number	0	2013	P	0	0
				P(a)	200	
				A	0	
Outcome No. 3: Improved soil cover and land management (SLM) in project area						
O3.1 Area of land in soil cover and land management (SLM) program	Hectares	0	2013	P	0	100
				P(a)	1136	
				A	1296	

B.1.3 Output Level Achievements

24. **At EOP, 97% of the expected output level results were achieved, as the Y-H Project met or exceeded most of the planned outputs under its three project components.** Four of six Component 1 outputs (OP1.1 – 1.6) were successfully completed as the project worked with its five partner agencies and several independent consultants to implement activities designed to address some of the main institutional weaknesses, including policy formulation,

[16] During the design stage of the project, 424.14 Ha of land was identified for rehabilitation (Figure 2). The identified areas were considered at the time to be priority areas for intervention and as such were targeted under separate initiatives during the time gap between design and launch of the project. The Proposal for Operation Development (POD) section 1.19, and the Financial Agreement (FA) section 2.08, points to reforestation efforts done through the then Forest Conservation Fund (FCF) as well as under the Climate Change Adaptation and Disaster Risk Reduction Jamaica project, as being complementary to the reforestation done under the Yallahs Hope Project.

data gathering and processing capabilities, and low capacity for implementing and enforcing policies that support more cohesive management in the WMUs. The main Component 2 outputs were the successful completion of the PES system design supported by two technical assessments to value the WMUs' resources and two PES knowledge exchanges with Costa Rica and Mexico (OP2.1-2.2). For Component 3, the project met and exceeded 87% of its EOP targets with the completion of one of two KAPB studies, delivery and monitoring of a comprehensive extension program that increased farmers' technical knowledge and drove the adoption of GAP and SLM best practices (OP 3.1 – 3.4). Over 5,000 stakeholders in the WMUs benefited from one or more of the project's interventions. Table 7 provides details on the indicators reported and progress achieved.

Table 7: EOP Results for Y-H Project Outputs

Outputs	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
Component #1 Institutional Strengthening & Capacity Building for Biodiversity						
OP1.1 Watershed Management MOU approved	MOU	0	2013	P	0	100%
				P(a)	6	
				A	6	
OP1.2 Socio-physical data gathered	Data set	0	2013	P	5	67%
				P(a)	3	
				A	2	
OP1.3 Monitoring protocols implemented	Protocol	0	2013	P	0	100%
				P(a)	1	
				A	1	
OP1.4 GIS-based decisions support system (DSS) for both watersheds configured and implemented	System	0	2013	P	1	100%
				P(a)	1	
				A	1	
OP1.5 Stakeholders of two WMUs trained in IWRM and biodiversity information management	Persons	0	2013	P	60	100%
				P(a)	60	
				A	60	
OP1.6 Communication plan and public awareness Campaign implemented	Annual campaign	0	2013	P	4	100%
				P(a)	4	
				A	4	
Component #2 Design and implementation of a market-based incentive scheme						
OP 2.1 Ecological services valued	Studies	0	2013	P	2	100%
				P(a)	2	
				A	2	
OP 2.2 Payment for Environmental Services (PES) designed	Scheme	0	2013	P	6	100%
				P(a)	1	
				A	1	
Component #3 Improved soil cover and land management (SLM) in project area						
OP 3.1 Extension programme monitored	KAP study	0	2013	P	1	50%
				P(a)	2	
				A	1	

Outputs	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
OP 3.2 Communities' capacity improved	People	0	2013	P	225	100%
				P(a)	350	
				A	350	
OP 3.3 Agriculture practices improved	Communities	0	2013	P	6	100%
				P(a)	8	
				A	8	
OP 3.4 Area replanted through reforestation and agroforestry	Hectares	0	2013	P	400	100%
				P(a)	299.3	
				A	564	

B.2. Assessment of Quality of Resulted Reported

25. **At the impact level both indicators were inadequate measures of the expected results for the impact of "Reduced soil erosion and siltation in both watersheds."** The Project's efforts in the targeted watersheds led to over 500 ha of watershed area being rehabilitated. In the case of *I1.1* the installation of gauges by the WRA is not an effective measure of sedimentation level, but rather expanded capacity to monitor flow. The RF modification to reflect this measure was not aligned with the 2012 hydrological assessment completed at design that included a budget to build capacity of the WRA with portable turbidity monitors at each site. This deficiency however was compensated for by the PEU's use of the Soil and Watershed Assessment Tool that demonstrated an eight percent reduction in sediments being generated from the upper reaches of the WMUs (Yallahs Hope PEU 2020).

26. There was also an RF flaw for *I2.1* as at start-up and during implementation the target was not adjusted based on the findings of the pre-feasibility CSM assessment that established the indicator's baseline. The project encountered delays in completing the CSM assessments over its LOP due to insufficient capacity strengthening for the lead TIA. The CSM consultant had to be reengaged, with one final EOP attempt to collect the required data. In addition, the Annual Operations Plan (AOP) change to PES designed (not implemented) means there was no activity generating a result for this indicator.

27. **For Outcome 1 indicator *O1.1,* the NEPA produced the Town and Country Planning Provisional Development Orders for Kingston and Saint Andrew and the Pedro Cays (2017) and the Saint Thomas Parish (2018) that are now being used by decision-makers in both Municipal Corporations.** Both documents were updated with several policy guidelines to advance SLM and water resource protection for over 80% of the WMUs. Policy Guidelines 55 and 57 placed limitations on activities detrimental to the quality and volume/flow of rivers, which supply water to the Mona Dam [and Hermitage Reservoir] and ensured agricultural use is properly managed to reduce the effects of soil erosion. For *O1.2: Agencies updating data*

in DSS (Decisions Support System) according to agreed protocol, while the project completed the GIS-DSS system design and provided sensitization to representatives of five partner agencies TE consultations determined that the protocol to guide watershed partners' update, storage of data, access to and use of the system was not included in the Consultant's TOR and hence the deliverable.

28. **The incentive scheme for the farmers was not completed as part of the PES design. The project lost an opportunity to link the significant benefits derived from its work with farmers under Outcome 3 to Outcome 2 in the absence of progress to PES implementation given the delays in completing the PES Design.** Farmers involved in the FFS programme delivered were eligible candidates for testing the adequacy of the incentive scheme and farmers' adherence to the PES protocol. In addition, future PES implementation would have benefited from a pilot that tested the suite of incentive tools to determine those that resonate with the farmers while delivering the desired ecosystem services. The strategy for engagement of the farmers in the FFS programme did not include standardized requirements that provided a gateway for further involvement in the PES, for example confirming land title or land use rights for a period of at least 5 years as a prerequisite for involvement in the training programme (FA, 2014). This requirement was an agreed preparatory step for the farmer training activity.

29. **The quality of several Y-H Project RF outputs was affected by technical and administrative implementation challenges and gaps caused by poor sequencing, inadequate utilisation of project design guidance, gaps in consultants' TORs and inconsistent quality of consultants' outputs.** The Project design documents outlined several interlinked activities where sequencing would be important, such as baseline assessments, in moving to implementation as highlighted in Figure 9. While adaptive actions were taken by the PEU, key Component 1 technical assessments required for outputs such as the watershed policy, Watershed Area Management Mechanism (WAMM) updates and M&E baselines were not completed to inform the final product. Table 8 provides the EOP status and the specific challenges that affected the quality of each project output.

Figure 9: The Impact of Sequencing in Y-H Project Implementation

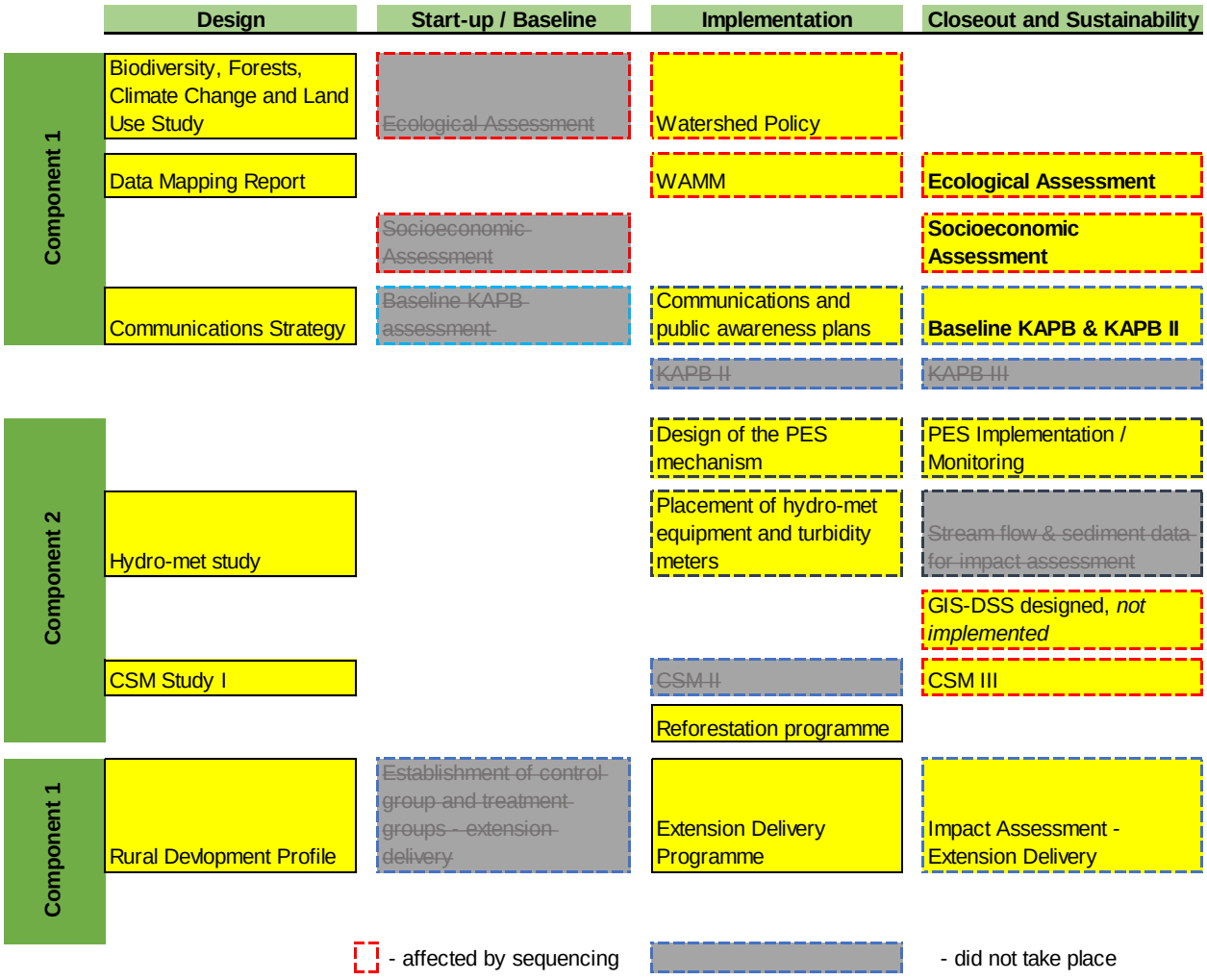


Table 8: Quality of Y-H Project Results

Y-H Project Result	Quality of the Result Achieved
O1.1 Watersheds covered by development orders that include land cover and soil management (SLM)	**Two Development Orders reached provisional status during project implementation.** Reference made to Policy Guidelines 55 and 57 that successfully integrated clauses to guide development approvals in the two WMUs. The Y-H Project AOP did not have any activity to advance this outcome. The final ministerial approval is still pending.
O1.2 Agencies updating data in DSS (Decisions Support System) according to agreed protocol	**The system design completed in the last year of project implementation**. Protocols for data sharing and management to guide partners' use of the system were not included in the consultant's TOR. Partner utilization to inform system adjustments is still needed.
O2.1 Area under contract	**PES design completed in 2019**. No pilot of farmer related components to test the application and maintenance of SLM.
O2.2 Contracts signed	**PES design completed in 2019**. No pilot of farmer related components to test the application and maintenance of SLM.

Y-H Project Result	Quality of the Result Achieved
O3.1 Area of land in soil cover and land management (SLM) program	**The technical assistance support to farmers and landowners in the WMUs led to measurable adoption of SLM best practices** through the FFS and the agroforestry programmes. Where SLM practices were applied on private landholdings, there were no conditionalities to establish land use rights that secured the project's investment (seedlings, inputs and technical assistance).
OP1.1 Watershed Management MOU approved	**The five PAs were used as operational tools that supported project implementation but did not facilitate the needed technical input for incorporating biodiversity in the updated watershed policy.** The challenges encountered in some TIAs delivering the results defined in their PAs led to the need for follow-on contracts with FD and RADA – as instructed at design – in order to accelerate implementation, e.g. agroforestry programme.
OP1.2 Socio-physical data gathered	**The hydrological assessment and willingness to pay studies were completed. The first KAPB assessment was also completed.** The hydrological assessment was delayed and was based on a "flaw" in data that informed the assessment. Farmers' willingness to accept was not established. The KAPB assessment was delayed and was therefore not useful to achieve the intended use – for establishing baseline, and development of communication messaging.
OP1.3 Monitoring protocols implemented	**The completed assessments were delivered within months of closeout** (e.g., the strong socio-economic assessment) and therefore did not inform project implementation. These outputs however are available to inform follow-on efforts in the WMUs. The 5 stream flow gauges were installed in the WMUs, however equipment is still needed to monitor sediment levels in the WMUs (as specified in the FA (2014)) to support PES implementation. CSM monitoring was removed from the output as a result of gaps in partner capacity to conduct the assessment, however, efforts have been made to conduct an EOP assessment.
OP1.4 GIS-based decisions support system (DSS) for both watersheds configured and implemented	**The system design completed in the last year of project implementation**. Protocols for data sharing and management to guide partner use of the system was not included in the consultants TOR.
OP1.5 Stakeholders of two WMUs trained in IWRM and biodiversity information management	**IWRM and biodiversity information management training tied to the GIS-DSS consultancy was completed.** The training largely took the form of sensitization that did not allow system users hands-on interface with the system to support future use in line with their roles.
OP1.6 Communication plan and public awareness Campaign implemented	**Four annual Communication Plans were developed and implemented based on the CS provided at design.** The programme as implemented provided significant visibility for the Y-H Project. Communication messages while relevant were not informed by the completion of the required KAPB and this limited the ability to effectively assess the attribution of the changes realised as a result of Y-H Project's interventions in the WMUs
OP 2.1 Ecological services valued	**Hydrological benefits and willingness to pay studies as components of overall PES design,** completed in line with the TOR. Draft micro-level catchment intervention plan also developed. Preliminary valuation model developed.
OP 2.2 Payment for Environmental Services (PES) designed	**PES design successfully completed based on the Consultant's TOR but there were gaps in key elements. Stakeholder validation and policy approval are pending**; The PES design output did not include an analysis of farmers' acceptance of the incentive scheme. Although the 2012 design document indicated need for this analysis, it was

Y-H Project Result	Quality of the Result Achieved
	not included as a deliverable in the Consultant's TOR and also remains a gap to implementation. The PES governance arrangements require continued validation with key stakeholders, including OUR and EFJ. A final updated PES system will need to move to Cabinet for approval prior to pilot and implementation.
OP 3.1 Extension programme monitored	**M&E plan prepared for the FFS programme by the PEU. The M&E plan as developed was not aligned with the requirement of the Y-H Project M&E plan** referenced in the FA (2014). Key data sets were not collected to confirm impact assessment. TIA reporting did not follow the structure of the plan developed.
OP 3.2 Communities' capacity improved	**Community groups formed and strengthened based on report prepared by the PEU, which referenced FFS and fire management technical training. T**he report indicates strengthened capacity of seven community groups. However, the design documents referenced in the POD (2013) required project support in areas such as group formation, record-keeping, meeting management, leadership development and financial management to support formalization and registration (where necessary), which were not implemented. This will limit continued existence post Y-H Project.
OP 3.3 Agriculture practices improved	**The extension programme was successfully delivered and PEU EOP survey determined over 60% adoption of best practices** by farmers in the area. Over 500 hectares under SLM and agroforestry best practices.
OP 3.4 Area replanted through reforestation and agroforestry	**The technical assistance support to farmers and landowners in the WMUs led to measurable adoption of SLM best practices** through the FFS and the agroforestry programmes. The target was exceeded with the combined efforts of FD and RADA working alongside WMU farmers. Selection of replanted areas may not be fully aligned to pilot/ test future PES implementation.

C. Efficiency

C.1. Implementation strengths and challenges

C.1.1 Implementation Strengths

30. **Factors that contributed to the success of the Y-H Project and the extent to which the PDO was achieved mirrored the principles[17] of integrated watershed management**. These factors, also presented in Figure 10, include:

- **A reasonably participatory and rigorous evidence-based design.** The Y-H Project benefited from a rigorous evidence-based design informed by rounds of consultations with key partners and stakeholders. The design process, while protracted, contributed to

[17] Five principles of IWM: watershed-based, informed by science; requires us to manage natural resources and human activities together; considers the interests and needs of not just the environment but also the economy and society because they are connected and impact each other in good and bad ways; relies on an adaptive management approach which establishes a plan, implements the plan, monitors and reports, and then re-evaluates and updates the plan, if necessary; and needs collaborative governance at many levels for shared decision-making and priority setting (Conservation Ontario, accessed 2020).

the development of a unique mix of strategies and interventions designed to address priority issues for IWRM in Jamaica. The design also provided the EA with a sound blueprint for implementation of the project's components at entry.

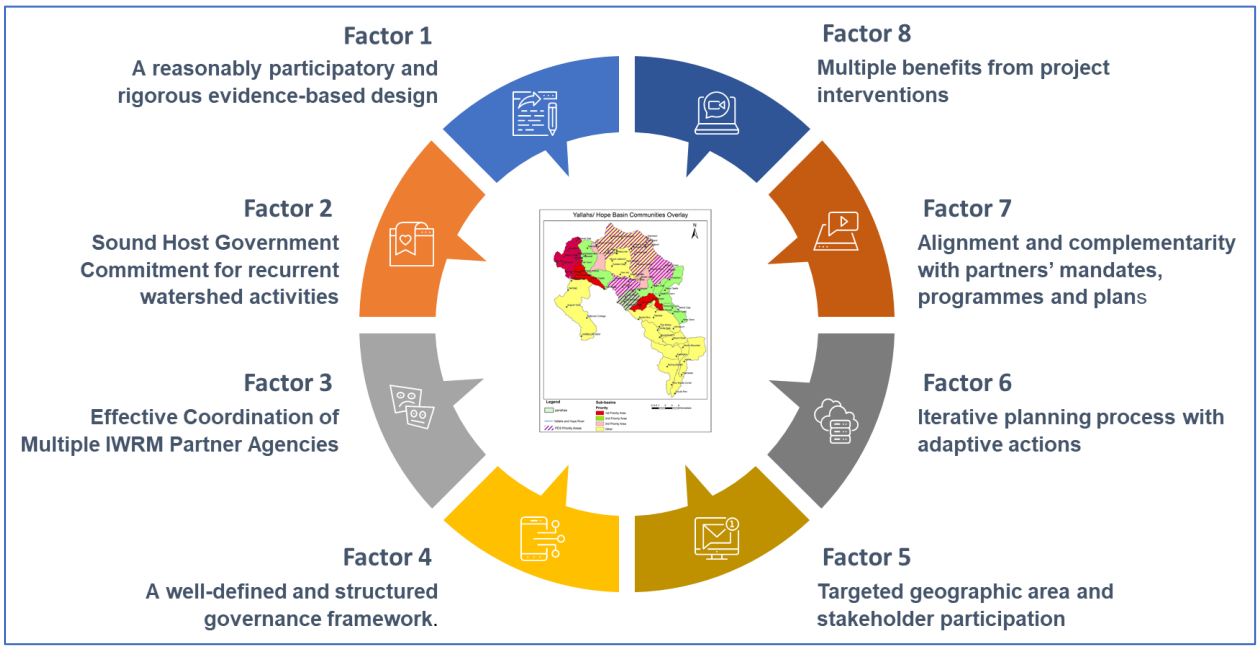
- **Sound Host Government commitment for recurrent watershed activities.** GOJ commitment was high during project preparation and was maintained during implementation for activities that were already within the implementing agencies manageable interest with input solicited from key agencies with future roles essential to project success.
- **Effective coordination of multiple IWRM partner agencies**. The project was effective in testing coordination of activities across multiple TIAs all essential to IWRM. A range of watershed activities, structured within an integrated frame, was implemented in response to a common PDO. It focused on utilizing and building capacity of both implementing partners and beneficiaries.
- **A well-defined and structured governance framework**. The project utilized a structured multi-level institutional framework, with arrangements that incorporated multiple stakeholders at the strategic, technical and operational levels, with specific decision-making requirements for each level and structure.
- **Targeted geographic area and stakeholder participation**: The Y-H Project focused on two of the island's twenty six WMUs[18], which are adjacent and inter-connected, especially as it relates to water provision that is impacted by land use changes, practices and livelihoods, resource management and biodiversity conservation and involving a diverse set of stakeholders including community residents; government, non-government; academia as well as local and international experts. The IWRM approach involved interventions on both private and public lands and focused on sustainable rural livelihood support. It promoted conservation and protection of natural resources through stakeholder participation.
- **Iterative planning process, with adaptive actions**: Based on the implementation experience, project management teams tested various options when faced with uncertainty and project constraints and challenges that helped to improve implementation efficiency and achievement of results.
- **Alignment and complementarity with partners' mandates, programmes and plan**s: The multi-agency approach to the Y-H Project benefitted from alignment of activities with TIAs' plans and programmes. In design, interventions complementing the project's activities and related to the PDO were also identified. Follow through in implementation

[18]Using a ridge to reef concept

recognized the complementarity and additionality provided by these activities, both technically and financially[19].

- **Multiple benefits from project interventions**. At the community level, SLM practices that had the dual benefit of soil conservation and income generation were attractive to the FFS participants (e.g., pineapple as vegetative barriers). The farmers reported that they were able to reap benefits from the pineapples, in terms of increased income and less landslides, while having their land for other crops.

Figure 10: Y-H Project success factors



C.1.2 Implementation Challenges

31. **The Y-H Project was met with a plethora of challenges throughout its life, from design to implementation. Many, though not insurmountable, often took significant time for resolution and were indicative of adaptive actions utilized, to varying degrees**. Challenges were of different types; some were deep-rooted and systemic either requiring major adjustments or could not be overcome and became serious impediments to implementation and achievement of the PDO. Others required consideration of work arounds, that could allow for the project to continue, but being clear about the assumptions being made and the level of flexibility to allow for these modifications. It is understood that watershed management is not about perfection but rather testing and making errors but making

[19] PIOJ and FCF activities contributed to Y-H project co-financing

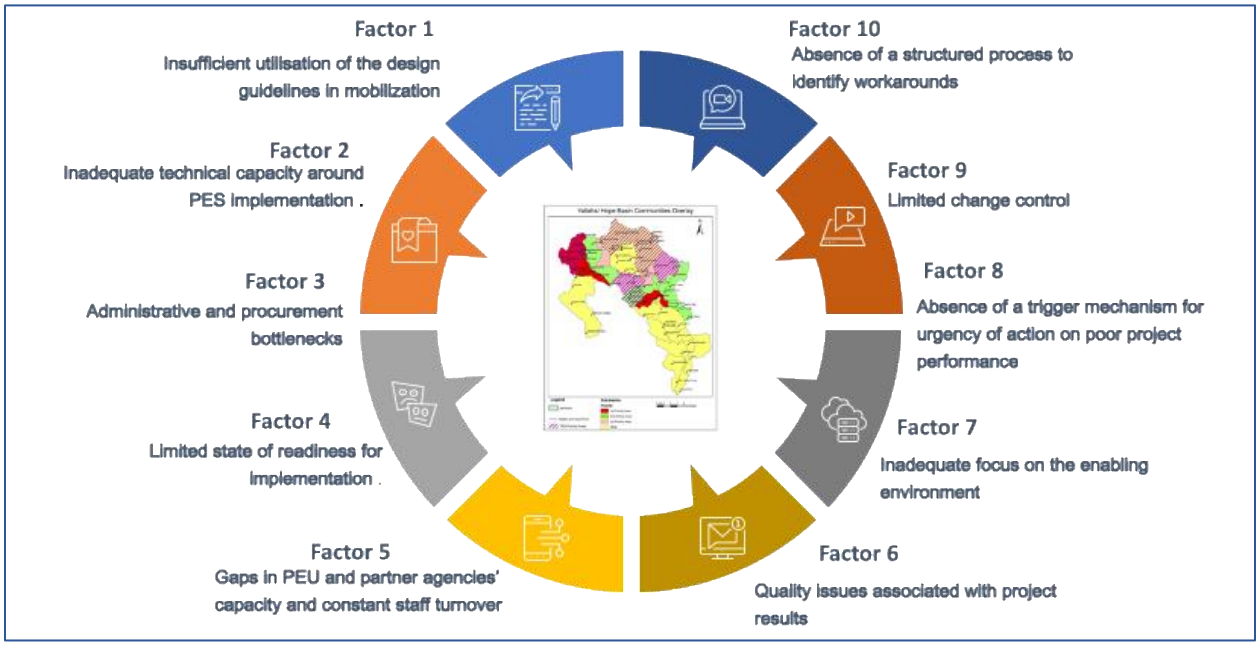
adjustments as it progresses to build on and enhance future efforts. Figure 11 summarizes the challenges which are discussed below:

- **Insufficient utilisation of the design guidelines in mobilization** that resulted in the project not fully maximising the advantage provided by having a set of documents that were detailed and the basis for implementation, especially where capacity (human and technical) was limited at entry.
- **Inadequate technical capacity around Payment for Ecosystem Services (PES) implementation** that required IDB's intervention to assist in the development of the PES consultancy Terms of Reference (TOR). The capacity gap was not filled at entry, but instead more than half-way through the project, with two knowledge exchanges and PES backstopping.
- **Administrative and procurement bottlenecks**, reflected in poor sequencing of inter-related activities, re-advertisement of procurements due to inadequate responses, inadequate budget projections for external consultancies, delays in producing TORs and finalizing technical aspects of activities especially prior to the mobilization of the TWG.
- **Limited state of readiness for implementation** that was reflected in varying levels of ownership of activities by implementing partners; limited preparatory steps taken by the EA prior to implementation, and variations in coordinated support provided to the PEU during implementation.
- **Gaps in PEU and partner agencies' capacity and constant staff turnover** that resulted in loss of institutional memory and impacted smooth project management and coordination.
- **Quality issues associated with project results**, including consultancy preparation and deliverables[20]; data and information inadequacies and a limited and short-term vision for approaches and results.
- **Inadequate focus on the enabling environment** (legal, regulatory and policy) for the PES and other policy results.
- **Absence of a trigger mechanism for urgency of action on poor project performance** that caused poor performance to spiral up until midterm. This was closely related to the levels of monitoring, evaluation and oversight of the project's progress at the management and strategic levels. Coupled with this, was limited joint annual reviews and planning that involved key stakeholders.
- **Limited change control** that made it difficult to track modifications to the project, including justification for changes.

[20] Time and quality

- **Absence of a structured process to identify workarounds** that address project constraints and minimize implementation delays.

Figure 11: Implementation challenges associated with the Y-H Project



C.2. Transition from Design to Implementation

32. **The Y-H Project had a strong foundation on which to transition to implementation, with a well-defined Project Document and supporting technical studies, assessments and plans that provided the basis for implementation.** The governance, administrative and operational elements of project design transitioned well into the implementation phase, but there is little evidence that the technical assessments, studies and plans were effectively utilized for execution, resulting in varying levels of project efficiency and interpretations of activity implementation requirements.

33. **Absence of a *pre-implementation planning phase*, during which time key tasks to be completed would have included development of silvicultural plans for FD's activities and the negotiation for PAs and other important steps for readiness such as staffing of the PEU; procurement preparation and development of the project's participatory M&E plan.** This time between project approval and start-up was when re-engagement of stakeholders was necessary. An important part of this re-engagement was the EA's and TIAs' understanding of the project's design and their respective roles in its implementation, transitioning to preparation of project plans. The PAs were used as operational tools to advance Y-H Project implementation and reflected a change in the design approach at entry as the project moved

to start-up and implementation. This use of the PAs did not allow for achievement of the original intended outcome[21] of improved biodiversity management in the WMUs (POD (2013) and FA (2014)) and the generation of the required biodiversity studies (IDB PMR, 2014) needed to inform the watershed policy and WAMM updates intended to strengthen the enabling environment.

34. **The IDB provided facilitation expertise using the PM4R methodology for the Inception meetings in April 2015, but the support was limited to the Agenda for that week with significant gaps remaining**. Given the status of partners' awareness and participation in planning to that point, the project management facilitation needed to go beyond that week of activities to carry out more participatory planning individually and collectively to ensure the partner agencies were in a state of readiness for implementation. For instance, individually partner agencies needed to understand their role and responsibilities and facilitated to navigate the various documents. Collectively, joint planning that reengaged the design team lead would have allowed for better sequencing of activities and understanding of how one activity fed into another. Importantly too, the M&E Plan needed to be further detailed and partners sensitized to the RF, their individual roles and responsibilities and requirements for reporting

C.3. Project design assumptions in implementation

35. **Strategic review of project assumptions made at design as well as the detailed review and understanding of the POD (2013) and supporting documents were critical next steps for the GOJ stakeholders for which there is little evidence of those undertaken**. Given the time lag between design and implementation a strategic review and planning step would allow the stakeholders to determine (i) if there were any changes to the assumptions (that is, assumptions the design phase failed to consider or changes in the assumptions made at that time), and (ii) whether the identification of these changes would require adjustments to project documents prior to the start of implementation. Absence of this proactive step made routine adaptive management steps more critical during implementation, to address issues that arose when an assumption did not hold true, and risk analysis and mitigation measures utilized to help address the issues that arose. The TE identified changing contexts and adjustments to design assumptions during the i*mplementation* phase as presented in Box 4 and further detailed in Annex 12.

[21] Outcome # 1.1: Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers

Box 4: Unmet design assumptions, changing context and adaptive actions

- Absence of a pre-implementation phase that should have focused on readiness for implementation, among other things.
- Inadequate market analysis and inadequate scoping that necessitated movement of funds between components along with a supplemental budget.
- Gaps in TIA capacity to undertake monitoring activities filled using proxy methods and re-hiring a design phase consultant.
- Low levels of understanding of the project's logic and flow that impacted the quality of results.
- Identification of a design-phase assessment as "flawed" impacted other activities and the late re-assessment caused major project delays from which the project could not fully recover.
- Inability to pilot the PES to test the concept.
- Weaknesses in M&E capacity and efforts that affected assessment of performance.
- Major project delays and other challenges that were assessed in the project's MTE, that resulted in re-scoping of parts of the project (including use of contracts with TIAs; mainstreaming project activities in the EA's plans; establishment of the technical oversight body; and improvements to the NEPA's support to the project and continued strengthening of coordination among watershed agencies and other stakeholders).

36. **Y-H Project implementation had a number of deviations from design that impacted the quality of implementation and results.** Analysis of the design documents presented in Annex 7 against the implementation records revealed the following important findings:
    - *The project was expected to utilize one MOU* (lesson from the IWCAM project that was incorporated in the Y-H Project) with seven[22] "institutions signing [the] MOU to manage the watersheds" as defined in the Results Framework (RF) in the approved POD (2013) but instead was interpreted differently and had five individual Partnership Agreements (PAs)[23] with TIAs[24] and one contract with the Jamaica Conservation Development Trust (JCDT). Use of one MOU was expected to be a signal of the coordinated and integrated nature of the project. The MOU was to facilitate conduct of biodiversity-related assessments for incorporation into the updated Watershed Policy and not for project operations. Similarly, the MOUs with NWC and WRA [as a special condition to disbursement for Component 2] were for their specific involvement in the design and implementation of the PES mechanism. Formal arrangements (including those specified in the FA (2014) for Single Source Selection (SSS) through contracts with FD and RADA for

[22] Means of verification: Signatures on document from FD, WRA, NEPA, RADA, JCDT, SDC & at least one Parish Council; 5 signed in Year 1 and 2 in Year 2 (NWC and WRA); the latter 2 being a condition for second disbursement.

[23] Forestry Department, RADA, WRA, NWC, MSJ.

[24] According to the POD (2013) and FA (2014) Component 3 activities were to have been implemented via Single Source Selection procurement method through contracts with FD and RADA, although a high-level agreement was indicative of the intent and a formal coordinated arrangement.

Component 3 implementation) with TIAs would have been separate agreements, focused on project implementation.

- *There was no parallel document that defined the technical responsibilities of the NEPA for specific Component activities.* Aide Memoires from design phase Missions indicated actions to finalize on component and activity lead and supporting responsibilities, which were agreed on during those Mission meetings. Although the NEPA was EA for the project, it also had lead responsibilities, like the other TIAs, for technical activities, which were well aligned to its mandate and organizational strategies. A document that defined its role and responsibilities for these activities would have served in a similar manner as PAs and contracts for the implementing partner agencies and also for monitoring of the activities, outputs and outcomes.
- *The PSC was intended to be structured with core and senior representatives from GOJ institutions with responsibilities in project development, financing and watershed management and would be chaired by the Permanent Secretary of the then Ministry of Water, Land, Environment and Climate Change (MWLECC) [now Ministry of Economic Growth and Job Creation (MEGJC)]*. The intent was for a structure through which high-level issues and decisions could be escalated. That level of governance would more readily allow for greater focus on tasks, such as watershed policy approvals; Cabinet approval of PES-type regulations; establishment of specific protocols that concerned multiple agencies, including protection of their data, provide for agency-to-agency monitoring, and provide direction and a long term vision for sustained action.

> *"The PEU had a team that they shared the documents with for review (TWG). I had to present to them via Zoom. There was good representation with the WRA, PIOJ, FD and others. I got good feedback."*
>
> *- Y-H Project Consultant*

- *The TWG was to be established early in the project*, to provide advice and guidance on technical matters. The TWG was not instituted until post mid-term and was found to be an effective structure, that improved the quality of project outputs and consultants' deliverables.
- *The PEU would have direct and full support from the NEPA*, through coordinated, planned organizational process flows. Its capacity would also be complemented by NEPA's existing capacity, in areas such as project management, monitoring and evaluation (M&E), procurement, communications and the various technical areas related to NEPA's corporate and strategic plans for which NEPA was identified as lead in activity implementation.
- *TORs for various consultancies associated with the three components were already drafted* and included in the design documents. Updates and modifications would have

been required but the technical bases for implementation would have been well established.

- *It was always envisaged that Component 3 activities would have been implemented via Single Source contracts with FD and RADA* as stipulated in the POD (2013) and FA (2014), but for the first half of the project, it was predicated on what was included in the PAs, and using NEPA's systems and processes. It was not until post mid-term that contracts were instituted resulting in acceleration of implementation and a more coordinated response from the two partners.
- *Monitoring and evaluation was well defined, in the POD (2013), FA (2014), the M&E Plan (2014) and specific design documents*, including the Rural Development document (2012), Communications Strategy (CS) (2012), Carbon Stock Monitoring (CSM) Assessment (2012) and Hydrological Modelling Report (2012). Evidence of these being brought forward to implementation was limited. Consequently, impact assessments are being conducted at project closure, without the expected organizational capacity built, established baselines and ongoing monitoring and technical assessments needed for the final analysis.
- *A number of stakeholders identified at design were not engaged in implementation*, including the Cabinet, the National Climate Change Committee [now Climate Change Advisory Board], Coffee Industry Board [now Jamaica Agricultural Commodities Regulatory Authority (JACRA)], Jamaica Business Development Corporation (JBDC), Tourism Product Development Company (TPDCo.), Social Development Commission (SDC), National Irrigation Commission (NIC). Private sector engaged was also considered critical, especially large private landowners in the upper watershed areas.
- *There was an expectation that significant community level group formation and strengthening*[25] *would have been undertaken*, led largely by FD and RADA, with their local groups, and with support from SDC and JCDT. The implementation outputs did not meet the group strengthening requirements defined in the design documents and the envisioned added value for project sustainability.

[25] The Rural Development Specialist Final Report (Smith 2012) in POD (2013) specifies the following:

- Community members organised into 6 groups (each approx. 50 members), made aware of project activities, their & other stakeholders' roles & responsibilities, and taken through a group formation process which will culminate in the groups' formalisation and registration (x 12 monthly meetings, rotated around the communities involved).
- Community Groups strengthened through bi-monthly meetings to enable their continued existence post-project (x 6 bi- monthly meetings/year, rotated around communities involved).

C.4. Project Planning and Reporting

Planning

37. **In keeping with requirements outlined in the FA (2014) and POM (2013, 2018), planning forms a critical aspect of the project and was largely facilitated through AOPs; however there were several deficiencies in planning processes relating to logical sequencing of project activities and adequacy of TIA involvement.** The POM (2013, 2018) indicates that AOPs should be submitted to the IDB within the first 60 days of each calendar year and this requirement was generally met by the PEU and where required (e.g., in response to project issues or constraints), the AOPs, or sub-elements such as the Procurement Plans[26], were adjusted and resubmitted for approval. AOPs, and their subset planning documents, benefitted from several levels of reviews (internal to NEPA and at the PSC level), however TIA involvement in planning processes was limited. TE consultations revealed that while TIAs were involved in planning processes, e.g., for Procurement Plans, there was no evidence of structured and routine participatory planning processes (e.g., annual planning meetings with TIAs' participation). Given various challenges experienced, which resulted in shifting timelines, TIAs needed to be kept abreast of project changes in order to plan for their own involvement, including making revisions to their individual Annual Plans. Additionally, while the scope of planning improved over the LOP (as in 2019 and 2020 when the AOP was expanded to also include the Results Matrix and Risk Plan), there were still weaknesses linked to logical sequencing of activities and planning in a manner that demonstrated understanding of the interconnectedness of project components and associated consultancies. For example, the WAMM includes a M&E framework for collecting and analysing data from the watersheds, however neither the WAMM nor the GIS-DSS Consultant was clear on how the M&E framework feeds into the GIS-DSS; nor was this link reflected in the individual TORs.

Reporting

38. **The GOJ adhered to most reporting requirements stipulated in the FA (2014) but was delinquent in its reporting on co-financing and M&E results**. The FA (2014) and POM (2013, 2018) outline key reporting obligations for the project and these, along with other project reports, have been captured in Table 9. The PEU generally complied with technical and financial reporting requirements that informed the EA, TWG, PSC, MOFPS, MEGJC, IDB and GEF on implementation progress. Annex 13 provides additional details on reporting by the PEU. TIAs varied in their compliance with reporting requirements referenced in PAs; these reports were not always timely and sometimes lacked the requisite co-financing data. Overall, there were gaps in the quality of reports submitted by both the PEU and TIAs, as reporting

[26] In the early years of the project (i.e., 2015 and 2016), the AOP included the Implementation Plan, Procurement Plan, Consolidated Financial Plan and Detailed Financial Plan, while in later years (e.g., 2019 and 2020), the AOP was expanded to also include the Results Matrix and Risk Plan.

did not consistently assess performance in relation to key indicators (such as Cost Performance Index (CPI) and Schedule Performance Index (SPI)) or against the Results Matrix. The latter contributed to inadequate M&E implementation and was also as a result of an absence of M&E planning at start-up (Section C.10). Additionally, with the absence of a structured M&E Plan, the PEU did not submit M&E findings to the IDB, GEF Focal Point or other entities/individuals stipulated in the FA (2014).

Table 9: Recurring Y-H Project Report Types by Owners

Report	Owner
Required Reports as per FA	
• **Annual work plans (AOPs)**	PEU
• **Procurement Plan**	PEU/PEU
• **Mid-year progress reports (Semi-annual progress reports (SARs))**	PEU
• **Annual reviews at the end of each year**	PEU
• **Annual Co-financing Reports**	PEU
• **Annual External Audit Reports**	EA
• **GEF Project Implementation Report (PIR)**	IDB / GEF
• **GEF Tracking Tools**	IDB / GEF
Other Y-H Project Reports	
○ **Monthly PEU Technical & Financial Reports**	PEU
○ **Staff Reports**	PEU Long-term Consultants (Communication and Procurement)
○ **Financial Report**	PEU/ IDB
○ **Quarterly and Annual Partner Progress Reports**	TIAs
○ **Annual Co-financing Reports**	TIAs
○ **Semestral Report**	IDB / GEF
○ **Project Monitoring Report (PMR)**	IDB

C.5. **Execution of the** multi-modal IWRM Y-H Project design

39. **The Project's multi-modal implementation framework was accepted by the key partners. During implementation various issues arose that affected the smooth implementation of these and ultimately quality and achievement of results.** A major challenge that was not identified as a risk during design was the availability and the technical assistance required for activity implementation, both for those areas for which the stakeholders had familiarity and novel areas of work. This was closely linked with the budget provided for the consultancies, which also had to be reworked in a number of instances. Table 10 provides the TE analysis of the different modes within the implementation framework.

Table 10: Performance of Y-H Project design methods and approaches

Project Objective	Component	Methods and Approaches	TE Analysis of Methods and Approaches
Improve the conservation and management of biodiversity and the provision of ecosystem services in the Yallahs River and Hope River WMUs.	Institutional strengthening and capacity building for Integrated Biodiversity and Watershed Management	Consultants – short-term technical assistance (STTA) assignments	• Access to and availability of quality STTAs was sometimes limited, requiring multiple procurements, thus extending the timeframe for delivery of results. • Identified budget lines were sometimes understated and required movement across Components. • Responsive to TORS provided, which were sometimes weak. • Delays and quality issues with products. • Data availability limited the extent of STTAs work • Adaptive management actions were often used to address issues
		Acquisition of equipment and tools (water quality monitoring, computer hardware and software)	• Little attention paid to these, especially for turbidity meters to monitor sediment delivery; and software for carbon sequestration assessment. • Water quality monitoring was not a primary project activity and there were no associated tasks set out for monitoring at the priority sites. • The training received by NEPA, WRA and MSJ was utilized for the EOP sediment assessment, using the SWAT tool. This was executed by the PEU but the extent of capacity built within partner agencies is unclear. • The capacity for CSM expected through the project was not delivered as the training received by FD was limited and did not allow CSM assessments • There was no established CSM M&E actions for the project. • At EOP the PEU re-engaged the design phase STTA for a post-project assessment. The results of this assessment were essentially unchanged from his 2012 assessment (Cifuentes 2012, 2020). • There was no follow up capacity building at EOP for the FD for future CSM assessments.
		Capacity building/training	• Knowledge exchanges were found to be beneficial in building GOJ capacity for PES but could have been conducted at start-up for greater participation during the Component 2 PES activity. • IWRM and biodiversity information management training were tied to the GIS-DSS consultancy was completed as an introduction to the DSS. There is no evidence of joint or individual stakeholder use of the DSS. It is not clear how the GIS-DSS will coordinate with national DSSs. • Farmer capacity building was good but was not maintained long enough beyond the FFS to determine value created. • Expanded networks of hydrological and meteorological monitoring equipment.

Project Objective	Component	Methods and Approaches	TE Analysis of Methods and Approaches
			• Increased understanding of data sets required for watershed assessments (e.g., hydromet).
		Appropriate media for dissemination	• Efforts to determine appropriate communication and information dissemination tools were not well maintained and there were missed opportunities to widen the base of stakeholders informed on the project, including potential beneficiaries. • Assessment of effectiveness and utility of the implementation of communication plans were not completed. Measurement of behaviour change not done
		Partnership Agreements (MOUs)	• MOUs were between the EA and the partner agency and were focused on the specific activities for which the partner either had full responsibility or was a participant. • There was little to no autonomy created by the MOUs and this created a significant bottleneck to implementation. • MOUs did not define the M&E functions of the partners, especially relating to the particular activities for which they had responsibly • MOUs were not adequately monitored either by the partner or the EA. • Reporting as per MOU requirements were not always adhered to and this created an issue for project reporting, especially in the area of co-financing. • Missed opportunities to expand the partnership working with the JCDT, given its intimate knowledge of the area, and work with communities, including co-financing projects.
	Creating economic & financial incentives to support biodiversity & IWRM	Studies (valuation of ecological services- hydrological impacts on water flow, willingness to pay study)	• Informed development of the PES. • No focus on the "willingness to accept" by upstream stakeholders. • Unavailability of data to support decisions on the community-level interventions. • Provided increased understanding of the importance of water services for water users. • Informed future needs for next phase PES implementation and broader IWRM actions.
		Planning (design of the PES- financial and legal arrangements)	• Informed development of norms and procedures for implementation of financial mechanisms.
	Implementing sustainable livelihoods, agriculture, and forestry in watershed communities.	Capacity development/training	• Enhanced the adoption and adaptation of technologies and techniques (Farmer Field Schools (FFS)) • Technology and knowledge transfer (land husbandry techniques, fire prevention and management) • Built relationships in community groups and wider communities

Project Objective	Component	Methods and Approaches	TE Analysis of Methods and Approaches
			• Built relationships between GOJ entities and communities • Enhanced capacity to implement IWRM and individual GOJ agency mandates. • Expanded income generation potential. • Increased awareness of the environmental benefits and their linkages with the IWRM practices. • Improved understanding of the importance of working together for achieving IWRM results.
		Public-Private Partnerships (engagement of private landowners; Alternative Livelihoods, Agriculture and Forestry (ALAF) Working Group)	<u>ALAF WG:</u> • Very useful and participants considered it very successful. Joint planning and decision making was a good practice. • Short-lived, as major work was completed. Could have continued into 2018-2020, even with the transition to contracts. <u>PPP</u> • Short-lived, reconnaissance done of opportunities in the project areas and initial communication undertaken. • Activity aborted when target for reforestation/agro-forestry was me through the contracts. • No further engagement towards the PES was taken that could have further established steps to PES contracts.
		Contractual services from government agencies	• Allowed for efficient execution of on-the-ground project activities • Provided autonomy for TIAs • Did not include the relevant M&E actions.
	Management Coordination	Project Steering Committee	• Provided oversight, direction and decision-making multi-agency body • Did not include the high-level membership as envisaged. Key project steps that required high level decision making were not well executed affecting the completion of some activities. • Members liked the opportunity to share and to learn of wider project activities and their progress. • Focus was largely on achievement of outputs, with evidence of dialogue on the whole RF only close to EOP. • Participation generally from key agencies, but no private sector participation and civil society participation limited.
		Technical Working Group	• Provide technical backstopping for the project, including reviews of technical approaches, documents, consultants' deliverables • Could have been expanded to all things technical for the project and elevating critical issues to the PSC.

Project Objective	Component	Methods and Approaches	TE Analysis of Methods and Approaches
		Project Executing Unit (PEU)	• Capacity varied throughout the LOP; Three project managers over the duration and personnel on-boarded at different times. Inconsistencies with other staffing e.g. communications. • Support provided by the NEPA as EA was not optimized but improved post MTE. • Facilitation of coordination was evident but efforts to solidify structures were limited. • Built significant capacity for future work in the Y-H watersheds but efforts to maintain these beyond the LOP not clear.

C.6. Adequacy and Appropriateness of Management Arrangements

40. **The Y-H Project management arrangement that included *NEPA* as EA and the *PEU* having administrative and monitoring responsibilities and coordination with the *participating agencies* was appropriate for the implementation of the project.** The NEPA's strong technical capacity and established systems augured well for the project. The PEU's staff complement as defined was appropriate for its core responsibilities for management and coordination, and although the Project Manager had responsibility for M&E, the PEU could have included a separate M&E specialist, given the extent of monitoring, evaluation, reporting and learning.

C.6.1 NEPA support and intra- institutional coordination

41. **There is evidence that relevant NEPA Divisions and Branches provided support and backstopping to the PEU as indicated in the POM (2018) but coordination of this support to maximize alignment with Y-H project outcomes was limited.** Where gaps and weaknesses in the PEU capacity were identified, NEPA's support was expected to be complementary, with strong coordination with the PEU. Areas in which the PEU could have benefitted from greater NEPA coordinated support include project readiness; project management, procurement planning and management and M&E. A recommendation of the institutional assessment (Garrett, 2011) of the Agency, as EA, conducted at design was for NEPA to develop a Procurement Manual to guide internal procurement work flows. There was no evidence of this manual being available and this presented a challenge to the PEU's procurement function. The ICAS (Garrett, 2011) also provided an additional six key recommendations for NEPA's action in support of the project.

42. **There was limited evidence of a well-defined EA-driven project work plan/task order for the range of strategic, administerial, operational and technical support required to**

complement the PEU's capacity for successful Y-H project implementation. At entry the organogram presented in the POM (2013) was indicative of consideration of the EA's coordination requirements to support the PEU. However, this was not well operationalized pre mid-term, with significant burden placed on the PEU. Post mid-term, however, there were improvements in the coordination of support when NEPA made specific adjustments to improve its role in backstopping and facilitated greater cohesion with the PEU. Account executives bridged the communication gap between Divisions and specific project activities were listed as NEPA Key Performance Indicators (KPIs), and others incorporated in the Vision 2030 MTF. Account executives included a Director of Projects who had direct oversight of the PEU. The Environmental Management Division's Director, along with the Projects Director signed off on outputs and payments. NEPA staff filled PEU staff gaps during transitions to allow for continuity, as in the case when both the first Project Manager and the first Communications Specialist vacated their positions.

43. **The NEPA had lead responsibility for specific project activities, and while its staff participated in activity implementation, evidence of ownership of these activities by the Agency was limited.** Although there was a Component 1 output for "*Watersheds covered by development orders that include land cover and soil management (SLM)"* the linkages between the project and the NEPA's work on these DOs were not evident. In fact, there were no outputs that supported the outcome and there was no one measuring the progress on this indicator and its target.

C.6.2 Project Executing Unit's Performance

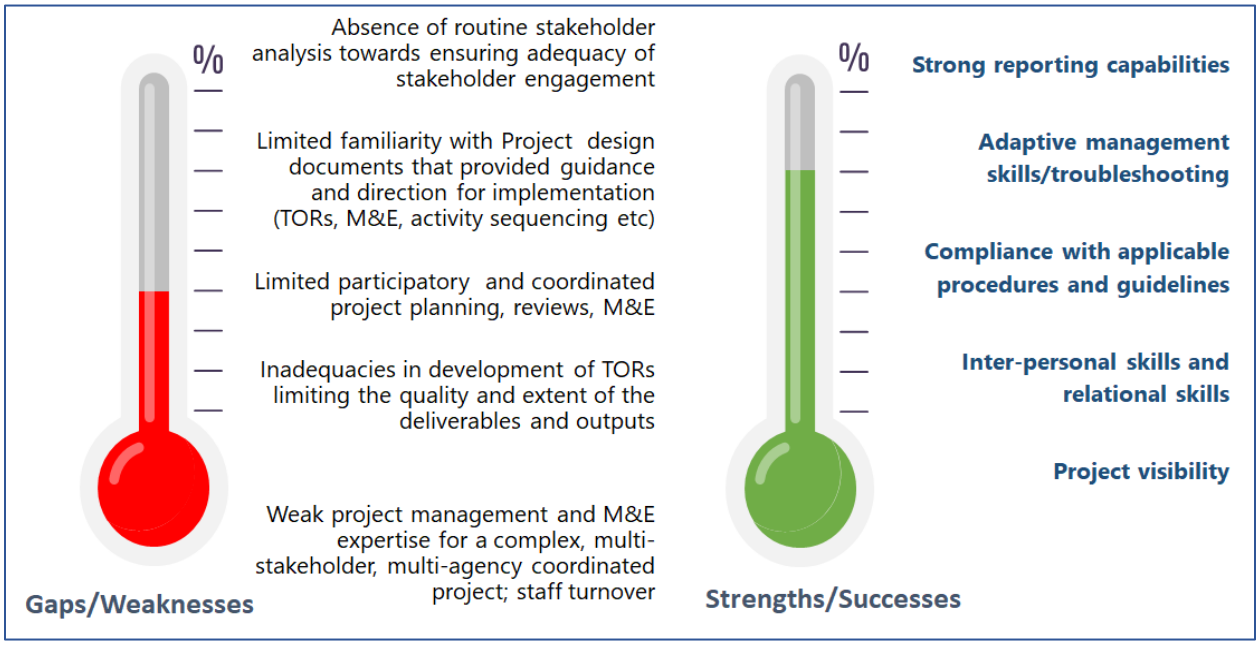
44. **The PEU, as the central pillar for the management, administration, and coordination of stakeholders for the Y-H Project, was an appropriate structure, but whose performance was constrained by the staggered hiring of personnel, staff turnover[27], and gaps in skills.** The project suffered from PEU staffing deficiencies over the LOP, which affected its ability to attain the level of agility required for timely implementation. An outcome that manifested as inadequacies in implementation planning and procurement assessment throughout project execution also resulted in low implementation efficiency. The capacity of the PEU to fully coordinate and monitor the stakeholders and track achievements was also hampered by personnel availability coupled with the limited complementary support provided by the EA in those areas of greatest need. NEPA did however provide support to fill gaps in instances[28]

[27] The project had three Project Managers during the LOP; the full complement of Technical Coordinators was never realized at any one time, resulting in one TC covering work across two components, among other duties such as secretarial services for the TWG

[28] PPERD staff attempted to fill project management gaps during transition from the 1st PM to the 2nd and NEPA's Public Relations Officer filled the Communications gap during the transition from 1st CS to the 2nd.

and improved its backstopping post mid-term. Detailed TE analysis of the PEU's capacity to carry out its responsibilities as defined in the POM is presented in Annex 13, while Figure 12 highlights strengths and weaknesses of the PEU that impacted the efficiency of implementation.

Figure 12: Strengths and Weaknesses of the PEU that affected efficiency of implementation



C.7. Y-H Project Partnerships and Coordination

45. **Coordination mechanisms were successfully established for project implementation, as outlined in project documents like the POM (2013, 2018) but their utilization varied over time and with stakeholders involved.** The PEU played a critical role in coordinating these partnerships, many of which were instrumental in building capacity of the partner agencies in key watershed technical areas.

46. **Partner agencies' willingness to participate was high and the extent of engagement and support provided through various mechanisms was indicative of their commitment to the activities and achieving the PDO.** This commitment provided an opportunity for sustaining coordination among watershed agencies and other stakeholders in the long term, but it is not clear how these mechanisms or their derivatives will be sustained beyond the LOP. Table 11 provides an analysis of the opportunities and achievements and weaknesses and challenges associated with the different partnerships forged and coordination mechanisms established. Box 5 provides some stakeholder perspectives on the PSC, a key Y-H Project coordinating mechanism.

Box 5: Testimonials from IWRM stakeholder entities on the effectiveness of the PSC

Testimonial 1: "The PSC was very effective in providing governance: The PSC tracks the activities against objectives/targets and proposes means to resolve challenges. The PSC has sought to meet more frequently than quarterly in order to more closely track progress and provide advocacy".

Testimonial 2: The PSC has always provided sound technical guidance that contributed to the progress of the project. However, with the re-scoping and downscaling of the project, the operation of the PSC matured to also include a governance arrangement that allowed for stronger institutional decision making. This allowed for more efficient troubleshooting which was a necessity to accomplish the activities under the project. In addition, the PSC has always facilitated a presentation done by the PEU that highlights the objectives against the status of each activity, the timelines for completion; as well as the disbursement, fiscal and budgetary allocations.

Testimonial 3: The PSC has played a critical role in providing an effective governance framework which includes direction and guidance to the project team. This is done through the monthly PSC meetings where the team presents updates on project activities and challenges experienced during implementation. The PSC either provides solutions or identify options to mitigate/resolve issues brought to the fore.

- TE PSC Surveys, 2020

Table 11: Coordinating mechanisms for the Y-H Project

Mechanism	Opportunities/Achievements	Weaknesses/Challenges
Project Steering Committee: Established and fully operational, changed chairman in 2018, post-mid-term review. Frequency[29] of meetings increased as project progressed based on need.	• Diverse multi-agency, multi-stakeholder governance mechanism. Excellent attendance by member agencies and other invited stakeholders. • Provides broad view of the project, with progress updates provided at meetings • Tracks activities against objectives and targets and proposes means to resolve operational challenges • Provides oversight, guidance and direction and makes decisions on execution • Risk analysis largely at operational level • Evidence of troubleshooting and adaptive actions employed • Supported by Alternative Livelihoods, Agriculture and Forestry (ALAF) WG (up to 2016) and a TWG (2018 to present) • MOFPS consulted on efforts for inclusion of project in the annual estimates of	• Composition[30] not entirely as stipulated in the FA (2014) • Inadequate inclusion and engagement of private sector • Community representatives not always present at meetings due often to resource constraints • Only in mid-2020 review of full RF commenced, prior focus was mainly on output level • Emphasis on sustainability weak throughout LOP, reflected in absence of a stakeholder led sustainability plan • Some members unaware of role of a TWG

[29] PSC meeting frequency: 2015 (2); 2016 (2); 2017 (3); 2018 (5); 2019 (6); 2020 (4)

[30] The PSC will be chaired by the Permanent Secretary of the MWLECC, and will comprise core and senior representatives from GOJ institutions with responsibilities in project development, financing and watershed management in the country (POD 2013, POM 2013, FA 2014) revised to "The PSC will be chaired by the CEO of NEPA, and will comprise core and senior representatives from GOJ institutions with responsibilities in project development and financing and watershed management in the country" (rev'd POM 2016).

Mechanism	Opportunities/Achievements	Weaknesses/Challenges
	expenditure for fiscal space to allow for its yearly implementation • Planning Institute of Jamaica (PIOJ) provided support and negotiation and post mid-term, assumed chairmanship • based on need and urgency of action • Frequency of meetings fostered an environment for discussion and contribution to the decision-making process • Instrumental in improving inter-institutional coordination and collaboration (e.g. RADA /FD, NEPA/WRA)	
Technical Working Group (TWG): Established in late 2018	• Face to face meetings efficient • Effective mechanism for consultancy supervision and feedback • Consensus on technical decisions such as review of consultants' deliverables • Allowed for engagement of technical personnel from partner agencies in project deliverables • Provided recommendations to PSC through Project Manager	• Delays with individual reviews • Focus largely on consultants' deliverables and less on project technical input, though this was an opportunity for expanded role
Project Execution Unit: Core for project coordination and management; Resides in the EA (NEPA)	• Strength in timeliness of reporting and adherence to project reporting requirements • Adaptive actions employed • Continuous improvement in relationships with project partners and coordination of stakeholders • Evidence of progressive improvement with PEU's technical capacity and backstopping (e.g. the case of the Project Manager (PM) conducting (Soil and Water Assessment Tool) SWAT modelling to determine post-project sedimentation levels)	• Timing of personnel hired did not facilitate efficient execution of responsibilities • Multiple changes in PM position affected implementation efficiency • Skills and technical know-how varied and affected project execution • Technical Coordinators hired at different times, absence of full complement affected efficiency of execution of duties • Project management, and M&E capacity weak • Technical know-how varied and affected quality of coordination support
Alternative Livelihoods, Agriculture and Forestry (ALAF) Working Group: Established on May 6, 2015 and Included RADA (both parishes and corporate), Jamaica Organic Agriculture Movement, Forest	• Met monthly • Kept stakeholders informed about the status of the activities and utilized their technical expertise to guide Component 3 implementation. • Considered effective in building cohesion, sharing and planning among	• Short-lived (held last meeting on September 7, 2016)

Mechanism	Opportunities/Achievements	Weaknesses/Challenges
Conservation Fund/Environmental Foundation of Jamaica, NEPA, Jamaica Conservation and Development Trust, Jamaica Fire Brigade, Forestry Department	key stakeholder entities for implementation of Component 3	
Hydro-met assessment support agencies: WRA, NEPA, NWC, MSJ	• Provided data for the assessment • Worked closely with the consultant to better understand analyses undertaken • Capacity building in hydrological modelling • PEU utilized the capacity built to conduct sediment assessment at EOP using the Soil and Water Assessment Tool.	• Plan for longer term data collection for future hydrological modelling by these agencies

PES support agencies (WRA, NEPA, NWC as primary agencies, but also included wider PES-relevant agencies, such as Office of Utilities Regulation (OUR), Environmental Foundation of Jamaica (EFJ) and RADA)	• Worked with a consultant to develop TOR for PES design
	• Capacity built:
	  ○ Sensitization through IDB's PES consultant
	  ○ Attended Knowledge Exchange Tours in Mexico and Costa Rica to better understand PES in action
	  ○ Improved understanding of a PES and data requirements for PES implementation
		• Limited evidence of use of the PES document produced at design to inform the TOR. For example, the project document spoke to a TOR that emphasized valuation of ecosystem services, while the TOR that guided CATIE was narrowly defined to the valuation of raw water
		• Initial low levels of understanding of PES that required an early capacity intervention
		• Capacity to adequately review the final PES design deliverables weak; unable to identify flaws that needed to be corrected (e.g. OUR and EFJ's concerns with the institutional arrangements)
		• Absence of final agreement by stakeholders on the PES design structure

GIS-DSS relevant agencies: WRA, NWC, MSJ, FD, RADA and National Spatial Data Management Division (NSDMD), among others	• Provided data and consulted on requirements for the system • Received demonstration on use of the platform • Sensitized on data requirements for the system • Efforts made to streamline with existing platforms (e.g. at NSDMD) • ODPEM, as disaster management agency, is expected to utilize the system to monitor from a flood risk standpoint	• Data insufficiency from agencies • Not well integrated with Watershed Area Management Mechanism (WAMM) and PES consultancies • Data sharing protocols still *ad hoc* and unclear

Mechanism	Opportunities/Achievements	Weaknesses/Challenges
Partnership Agreements: EA with each TIA (FD, RADA, MSJ, NWC, WRA)	• Provided a framework and enabling conditions for implementation • Established the roles and responsibilities for stakeholders in project implementation • Tool to enhance collaboration and cooperation • Defined commitments including financial (co-financing, human resources, technical)	• Delays in finalizing individual agreements • Process for negotiating agreements sometimes passive • Initially not well monitored by either party involved but improved post mid-term • Reporting varied based on partner capacity and PEU follow up • Not effective for Component 3 activities, as the use of NEPA's processes slowed implementation efficiency • Some TIAs did not fulfil their PA commitments, which impacted project in areas of planning (e.g. RADA and farm plans; FD and monitoring of CSM; WRA and monitoring of sediment loading) • Some TIAs felt the approach to execution was top down with the way the PAs were implemented (but this changed with adaptive management actions post mid-term.
Other partnerships: FD-Jamaica Fire Brigade/RADA; FD-NLA; NEPA-Scientific Research Council/Hope Gardens)	• Effective fire prevention and management training • Long term relationships among stakeholders allowing for continued working arrangements, as required	• Longevity of these partnerships dependent on resource availability

47. **Private sector involvement in project implementation was low and efforts to build local community cohesion through group formation and strengthening was limited, posing a risk to sustainability**. Opportunities existed to engage private sector (e.g., in expanding the land cover and soil conservation practices; provision of financing) and around the time of the MTE, there was a census of private land owners in the upper watershed areas but no further exploration was done towards engagement. Community groups' development was outlined in the Rural Development Specialist's design document and required involvement of TIAs and a focus on the community-based organizations[31] associated with these, but also necessitated

[31] Farmer groups (RADA) and Local Forest Management Committees (FD)

expansion of the partner agency base to include SDC, JCDT and other NGOs and CBOs). There was limited focus on "group formation and strengthening", including the selected groups' ability to self-manage; build and maintain cohesion and ultimately provide specific services to its membership and by extension the community.

C.8. Financial Planning and Management[32]

48. **The EA/PEU's fiduciary management for the Y-H Project was strong and reflected full compliance to the FA (2014) while adhering to the financial management and procurement protocols of both the GOJ and the IDB. The GOJ complied with annual financial reporting, with external audits completed in a timely manner.** Audit reports findings revealed the following that were in compliance with the FA (2014) special and general conditions and IDB and GOJ guidelines:
    - Disbursement requests and procurement processes.
    - Cash flow management in accordance with the International Public Sector Accounting Standards cash basis.
    - Fixed asset register duly established and updated.
    - Goods and services utilized as required.

49. **Planned cash flow analysis was not reflective of procurement capacity at the PEU along with the inherent lags associated with the IDB and GOJ guidelines. Inherent procurement risks and constraints were not reflected in the budget proposals submitted to the MOFPS. Up to EOP, unutilized fiscal space showed that planned rate of expenditure submitted to the MOFPS was overly ambitious.** Cash flow requirement projections were constrained by multiple procurement challenges, which limited the PEU's ability to mitigate against inherent procurement risks by adjusting cash flow/procurements accordingly. Annual procurement plans were submitted to the IDB for No Objection (NO), following which the procurement proposal for fiscal space to undertake procurements were submitted to the MOFPS. Fiscal space requests by the project up to EOP were adjusted downwards by the MOFPS to meet project capacity, due to incomplete procurements from the previous year (Table 12). Within that period, by the second quarter of the fiscal year, a supplemental fiscal space proposal was used to adjust the initial fiscal space granted to a lower and more feasible level. Even after the supplemental fiscal space was granted, there was still unutilised fiscal space at the end of the fiscal year (Table 12). The total value of the unutilized fiscal space allotted to the project by GOJ and GEF/IDB, adjusted for inflation amounted to US$1,519.94 million.

[32] Due to the unavailability of data to EOP, the analysis utilizes GOJ's financial year (FY) data (April – March).

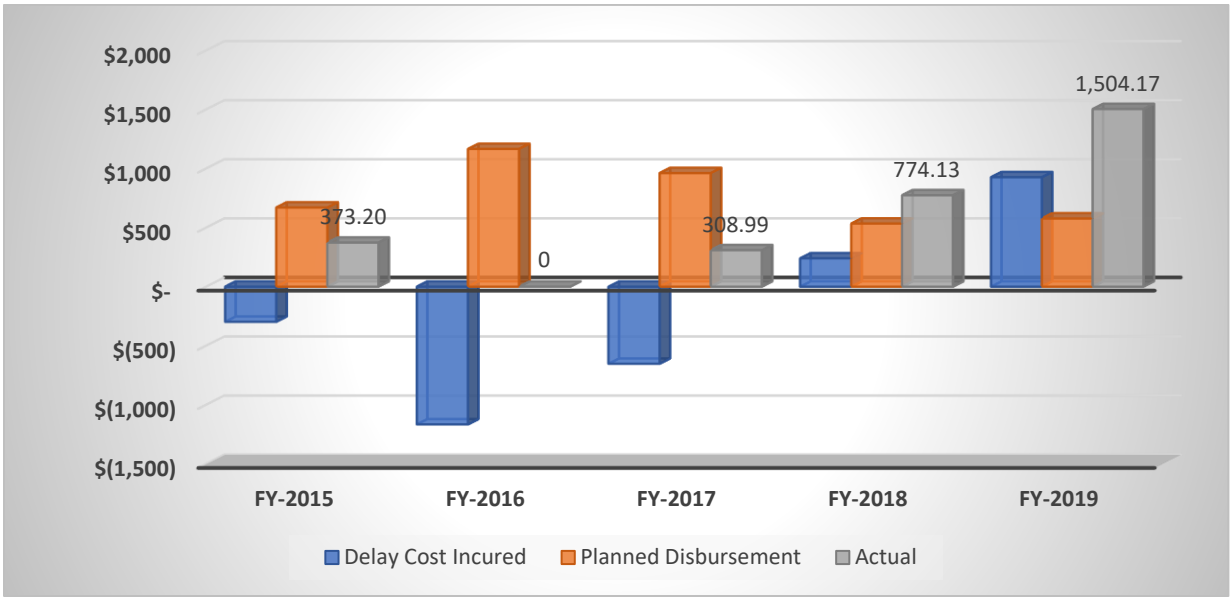
Table 12: Fiscal space utilization over the Y-H Project LOP

Budget Allocation			Spent		Balance (Unused Fiscal Space)				Present Value US$	
(US$000's)			(US$000's)		(US$000's)			%	(000's)	
FY	GOJ	GEF	GOJ	GEF	GOJ	GEF	GOJ	GEF	GOJ	GEF
2014	12.62	98.83			12.62	98.83	100%	100%	16.92	132.44
2015	29.76	209.25	24.55	148.23	5.21	61.02	18%	29%	6.65	77.88
2016	44.71	199.18	23.81	139.54	20.90	59.64	47%	30%	25.41	72.49
2017	75.10	344.03	49.86	289.26	25.24	54.78	34%	16%	29.22	63.41
2018	246.94	815.03	246.94	815.03	0.00	0.00	0%	0%	0.00	0.00
2019	424.94	1605.39	370.91	1125.72	54.04	479.67	13%	30%	56.74	503.65
2020	147.82	1180.78	52.96	740.50	94.86	440.27	64%	40%	94.86	478.01
	981.90	**4,452.49**	**769.02**	**3,258.28**	**212.87**	**1,194.20**			**229.79**	**1,290.14**

50. **GEF/IDB disbursement rates along with accumulated disbursements were on average below the planned rate, from start-up to EOP.** Due to project implementation delays, there was a difference between planned and actual disbursements made by the IDB, where allotments not disbursed represented a cost to the IDB. Figure 13 shows a negative variance of US$2.116 million from start-up to March 2018 and for the period April 2018 – March 2020, there was a positive variance of US$1.167 million, where actual disbursements exceeded planned amounts. As of March 2020, the net disbursement variance was negative US$948,955.78. As of November 2020, the net disbursement variance[33] was estimated at negative US$ 1.367 million, which confirms that the project was significantly behind schedule. Although the project increased procurements post mid-term, this increase was not enough to compensate for the negative variance generated during the LOP.

[33] Negative annual variance (Annual Actual less Planned disbursement) indicates that the summed difference over the period was negative US$1.367 million.

Figure 13: IDB Disbursement Trends over the LOP



C.9. Economic efficiency

C.9.1 Resource Mobilization and Utilization

51. **At GEF CEO endorsement, the Y-H Project was financed through support from the GEF in the amount of US$3,909,441 and with GOJ co-financing in the amount of US$8,872,357. Throughout the LOP, GOJ co-financing increased to US$10,375,872.34, and overall Project resources mobilized for implementation amounted to US$14,285,313.34. At EOP, the Project spent a total of US$13,752,149.75, with 87% of GEF financing utilized (US$3,392,543) and co-financing increased by 17% to a total of US$10,359,606.75.** Least cost was achieved at procurement by utilizing existing technical capacity to map the project charter into a set of TORs for procurement. This was undertaken according to the AOPs via a three- step sequential review process for technical efficiency and feasibility. For the implementation period 2015-2020, actual direct procurement cost was below planned cost, but the actual procurement period was greater than the allotted time.

52. Actual expenditure from GEF allotted funds exceeded planned cost for Components 1 & 2 by US$162,840.82 and US$47,545.23 respectively, which was financed by savings of US$ 679,504.02 (14%) on Component 3 procurements in addition to a US$283,734 (95%) of the IDB TC grant mobilised for Component 2 (Table 13).

Table 13: Breakdown of GEF and GOJ Financing

Investment Category	Original Budget in force US$			Actual Expenditure Estimates US$		
	GEF	GOJ	Total	GEF	GOJ[34]	Total
Component 1 - Institutional Strengthening & Capacity Building for Biodiversity	619,400	634,261	1,253,661	782,241	908,626.02	1,690,867
Component 2 - Design of a market-based incentive scheme	685,843	1,997,761	2,683,604	733,388	2,461,698[35]	3,195,086
Component 3 - Sustainable livelihoods, agriculture, and forestry in watershed Communities	2,174,837	6,284,657	8,459,494	1,495,333	6,927,906	8,423,239
Project Implementation Unit	329,361	255,678	585,039	294,929	281,847	576,776
Evaluations	100,000	0	100,000	86,652		86,652
Grand Total	3,909,441	8,872,357	12,781,798	3,392,543	10,580,077	13,972,620

53. **At EOP, GOJ co-financing requirements were met and exceeded, despite delays in TIA delivery of annual co-financing reports, and included complementary contributions from other projects in the project area and IDB's supplementary grant.** Final co-financing reporting (PEU, January 2021) indicated a total co-financing of US$ 10,359,606.75 were utilized over LOP (Table 14). Annual co-financing reporting was inconsistent and TIAs did not adequately disaggregate cash and in-kind contributions. Notwithstanding, at EOP co-financing mobilisation/utilisation reflected an increase of US$1,503,515.06 (17%)/US$1,487,249.06 (17%) over commitments made at GEF endorsement, respectively.

[34] GOJ co-financing reporting was not disaggregated by component, and as such the GEF/GOJ ratios in the FA (2014) were used to estimate GOJ contribution by component. The figures provided reflects estimates and as such are indicative of resources allotted to each component.

[35] Inclusive of the multilateral finance mechanism of the IDB (Ordinary Capital Strategic Development Programme) signed by the Ministry of Finance and the Public Service on October 13, 2017.

Table 14: GOJ Co-Financing

Co-Financing by Organization	At CEO Endorsement	At Project Completion
Forestry Department	4,494,746	5,203,738
Rural Agricultural Development Authority	353,000	508,008
National Environment and Planning Agency	563,942.00	604,296.75[36]
National Water Commission	55,000.00	-
National Water Commission	1,355,740.28	1,355,740.00
Planning Institute of Jamaica	601,787.00	867,967.00
Forest Conservation Fund	1,380,000.00	1,536,123.04
Inter-American Development Bank[37]		283,734.00
Total Co-financing	**US$8,872,357**	**US$10,359,606.75**

C.9.2 Project Performance

54. **The Schedule Performance Index (SPI), Cost Performance Index (CPI), Cost Variance (CV) and Schedule Variance (SV) are indicative of project inefficiencies arising from implementation delays. The implementation delays manifested as delayed procurement initiation and prolonged procurement durations**. **Despite a competitive procurement process with least cost, average CPI of 0.26 and SPI of 0.61 are indicating that significant delays occurred during implementation which cause the project to be incomplete at EOP**. **The cost variance (CV) indicate that actual project implementation cost exceeded the value created annually; with US$6.787 million[38] associated with implementation delays** (Table 15)**.** Average CPI of 0.26 is confirming that annual earned value was on average 26% of the project cost as of March 2020, thereby indicating that only US$0.26 of each dollar of project expenditures were being converted into value. Average SPI (0.61) achieved over the LOP is indicative of untimely project implementation and that the planned rate of value creation was not being achieved. Further analysis of Figure 14 shows that project performance (SPI) improved in 2018 (post mid-term) when adaptive actions were taken through a rescoping

[36] This amount of US$ 604,296.75 includes In-kind and cash contributions through complementary project activities, Government of Jamaica Capital-B Budget, counterpart technical/field staff time for project activities, services, use of equipment and transport along with the payment of taxes under the PES consultancy.

[37] Subsequent to CEO endorsement, the GOJ secured a TC grant from the IDB in October 2017 and total resources committed under this grant was US$675,000, bringing the total co-financing commitment to US$ 9,547,357.28.

[38] Sum of CV of $5,019,541 and SV of $1,767,766 (Table 15).

exercise. Although there was accelerated implementation, CPI figures indicate that the cost expended was creating value at a slower rate when compared to the average planned value estimate of US$781,888 per annum, based on the GEF Pluriannual Execution Plan (PEP). The absence of a trigger mechanism for timely corrective action that responded to underperforming SPI and CPI necessitated an extension of the project's terminal disbursement date to effect project completion by October 31, 2020.

Figure 14: Y-H Project Implementation Efficiency Trends[39]

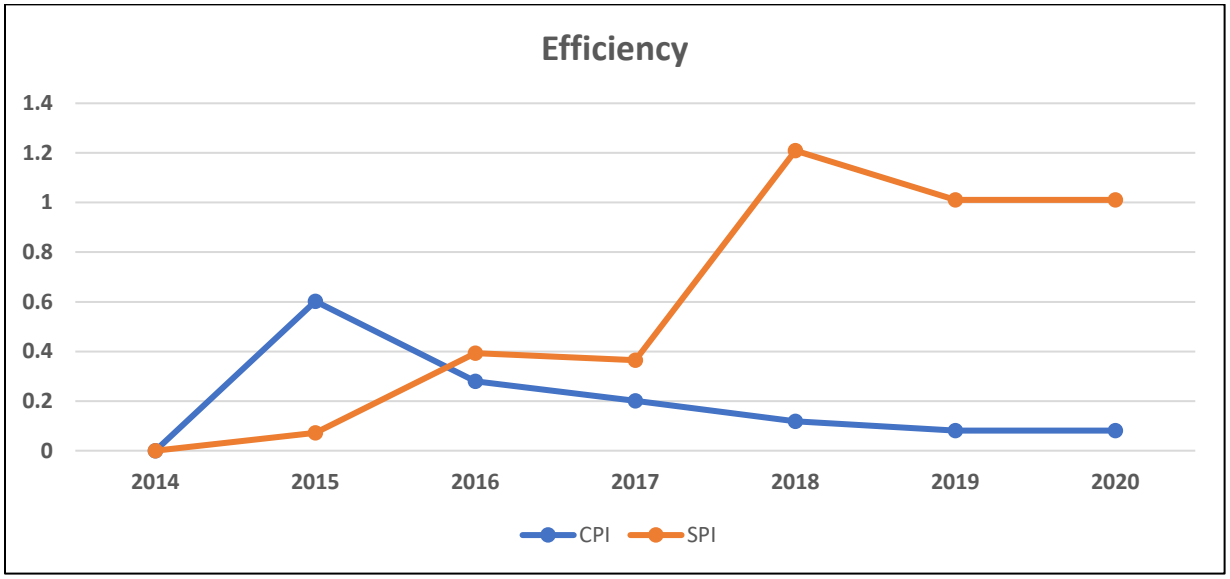


Table 15: Inflation Adjusted SV and CV

R- interest rates	0.05							
	2014	2015	2016	2017	2018	2019	2020[40]	Total
Adjusted Cost Variance	-	(37,140)	(150,972)	(239,697)	(929,144)	(1,831,294)	(1,831,294)	($5,019,541)
Adjusted Schedule Variance	(629,416)	(685,608)	(317,805)	(542,644)	355,255	26,226	26,226	($1,767,766)

C.9.3 Cost Effectiveness Analysis

55. **The Y-H Project implementation was not cost-effective as overall outputs and outcomes were not fully achieved. In addition, the total economic cost of implementation, exceeded the planned cost, while achieving less than desired planned outputs and outcomes. Those outcomes and outputs that were completed, were achieved at reasonable direct cost but suffered from high unplanned cost associated with implementation delays. The integrated approach towards environmental management of the watersheds was a relatively efficient**

[39] 2019 figures were used as proxy for 2020.

[40] Data for 2020 were unavailable, and as such, the assumption was made that the cost of delays were similar to those for 2019.

methodology to target areas with high environmental benefit and low opportunity cost. When compared to other similar projects with an integrated, multi-faceted design, the project was comparable in cost and planned outcomes. The project, by design, maximised the environmental benefits while addressing socio-economic livelihood improvement. The Y-H Project targeted areas within the watershed with steep slopes (above 35 degrees) that were prone to anthropogenically induced erosion (ecosystem service delivery) with low opportunity cost, (low-productivity per acre). Low opportunity cost within the watershed allowed for the maximisation of possible PES coverage per dollar of income received, while simultaneously addressing those areas with the high environmental benefit. That is, targeting of areas with high slopes and low productivity within the hydrological basin that feeds the NWC intake also increased the effectiveness of the design.

C.9.3.1 Cost-Effectiveness Analysis of Procurement

56. **At EOP, the Y-H Project was found not to be cost effective, although having achieved 10 of 11 of the desired outputs (Table 7B) but only 3 of the 7 planned outcomes (Table 7A) at a total economic cost of US$24.509 million.** The total economic cost of US$24.509 million includes combined GEF and GOJ (including an IDB TC grant) contributions of US$ 14.285 million; US$$6.787 million in implementation delays; US$ 1.520 million in unused fiscal space; a disbursement variance of US$1.367 million, and unspent GEF funds of US$0.534 million and TC grant funds returned amounting to US$0.016 million. Though the Project did not achieve all its planned outcomes or outputs over the LOP, the total direct cost of implementation (US$14.285 million) exceeded the planned cost (US$12.782 million), where actual co-financing attributed to implementation (US$10,359,606.75) exceeded committed co-financing over the LOP (US$9,547,357.28) by US$812,249.06 or 9% (Tables 14 and 16). At EOP, there were incomplete procurements of approximately US$310,058.72 or 8% of GEF budget (Table 17), which were expected to be completed prior to project closure (PEU, 2020). For the Y-H Project implementation, procurements were the only effective controllable for the PEU that could ensure cost-effectiveness by applying a mix of strategies. From the cost-effectiveness analysis, the findings are indicating that significant delays in procurement created unplanned cost of approximately US$10.224 million.

Table 16: Total Economic Cost of Y-H Project Implementation at Closure

Total Implementation Cost US$			
Direct	**GEF**	**3,909,441.00**	
	GOJ Co-financing (including IDB TC)	**10,375,872.34**	
Direct Cost			**14,285,313.34**
Unplanned	**Implementation delays**	**6,787,307.00**	
	Unused Fiscal Space	**1,519,937.50**	
	IDB disbursement variance	**1,367,000.00**	
	TC returned	**16,266.15**	
	Unspent Grant Funding	**533,638.70**	
Unplanned Cost			**10,224,149.35**
Total Implementation Cost US$			**24,509,462.69**

Table 17: Committed Funds - November 23, 2020

Supplier	Description of goods /service	Amount Committed US$
Water Resources	GIS –DSS consultant	18,985.653
BNS Salaries a/c	Consultant remuneration	7,488.970
RADA	Irrigation Programme	152,473.42
Auditor General's Department	Audit Fees	3,676,.47
Collector of Taxes	Withholding tax (Water Resources Associates)	10,860.29
Massy Technologies	Computers (GIS DSS)	22,635.00
Dr. Alicia Hayman	Final Evaluation Consultancy	6,617.65
Industrial & Technical Supplies	Lab Supplies	20,602.52
Miguel Cifuentes Jara	Carbon Stock consultant	66,718.75
TOTAL		**310,058.72**

C.9.3.2 Cost-Effectiveness Analysis through Comparative Analysis of Similar Alternatives

57. **The Y-H Project was comparable to the mean cost of PES projects funded by the GEF and similar in nature and scope. PES design, as proposed in the Y-H Project, is a more cost-effective approach relative to single-focused conservation designs, to achieve the desired**

outcomes within the Yallahs and Hope River WMUs. By design, the Y-H Project targeted SLM, socio-economic and biodiversity outcomes implemented simultaneously within an integrated, multi-dimensional and sequential framework. There is some evidence of sequential implementation that enabled the leveraging of project's outputs as inputs into the achievement of project outcomes. For the purposes of comparison, project designs capable of achieving the Y-H Project objectives range from single methodological to integrated multi-dimensional design approaches within a sustainable development framework (Annex 14). Table 18 (details provided in Annex 14) indicates that single-focused Biodiversity and SLM project designs cost on average US$11 million and US$45 million, respectively and using this approach to implement these two thematic areas, the cost would be approximately US$57 million. To address each component singularly, would represent duplication of effort without a commensurate increase in desired outcome. Under the Y-H Project PES design biodiversity, through agroforestry, was proposed as a means of enabling and capturing the positive correlation and complementarity[41] between SLM and Biodiversity.

Table 18: Comparison of GEF-funded projects by design elements

	Biodiversity	SLM	Integrated approach (PES)
	('000s)	('000s)	('000s)
Mean	$11,318	$45,708	$13,800
Median	$5,113	$33,726	$12,907
Mode	$975	$33,726	$13,800
Min	$973	$11,976	$2,102
Max	$38,000	$148,744	$41,238

C.9.4 *Ex-post* Cost Benefit Analysis

58. **The Y-H Project's *ex-post* CBA found that the project returned a negative net benefit of US$2.193 million costing an estimated US$24.509 million, while generating approximately US$22.316 million in benefits at the end of implementation**. The economic rate of return (ERR) was estimated at negative 9%. The total cost of US$24.509 million includes combined GEF and GOJ co-financing contributions of US$ 14.285 million (including IDB TC); US$$6.787 million in implementation delays; US$ 1.520 million in unused fiscal space; and a disbursement variance of US$1.367 million, unspent GEF funds of US$0.534 million (Tables 14 and 19). Overall benefits of Y-H Project implementation used conservative estimates that are categorized into a macro policy enhancement capacity for the regulatory agencies for which benefits accrued was US$20.942 million and a micro level enhanced livelihood capacity

[41] The positive correlation and complementarity between SLM and biodiversity has been confirmed by several studies, including FAO 2017.

in the amount of US$1.374 million in income earned by farmers (Table 19 and Annex 15). Other identified benefits for which value was not available at the time of this TE include:

- The establishment/enhancement of the carbon sink potential of the Y-H WMUs.
- Improved capacity on REDD-Plus through CSM at the Forestry Department.
- Increased area of forest under sustainable management and maintenance of the generation of services from the forests.
- Utilization of the decision support system for disaster risk planning and climate change adaptation and mitigation.

Table 19: Y-H Project CBA Summary

Benefits	Amount (US$)	Total
Macro policy enhancement capacity	**20,941,913.32**	
Micro level (livelihood improvements)	**1,374,193.00**	
Total Benefits		**22,316,106.32**
Total Implementation Cost US$		**-24,509,462.69**
NET BENEFIT		**-2,193,356.36**

C.10. Procurement

59. **Procurements of goods, services and works under the Y-H Project were generally compliant with GOJ and IDB procurement policies and guidelines**. Over the LOP, procurements have been successfully completed by the PEU, under the supervision of the IDB. Contributing factors for successful completion include:
    - The PEU's preparation, submission and execution of procurement plans (with approved adjustments as required).
    - The multi-level control and approval systems (internal and external to the EA) and the technical assistance support and supervision provided by the IDB, though the many-layered approval processes sometimes extended the timeline for procurements.
    - The technical input of TIAs in the preparation of procurement documents and participation on evaluation committees.

60. **Procurement-related issues and challenges were found to be one of the major causes of implementation delays and required several levels of intervention over the LOP.** The longest delays were usually associated with procurements for consultancy services. For example, the procurement process for the PES consultancy was inordinately lengthy (22

months[42]) and far exceeded the expected timeframe (10-14 months for Quality Based Selection of Consulting Firms) outlined in the procurement process flows developed by the PEU. This extensive process was as a result of the extra time required to fill the budget gap and resolve taxation issues. In order to minimize the impact of the delay, the adaptive action taken involved an agreement to allow the consultant to implement the activities simultaneously as opposed to sequentially; however, this had possible implications for overall quality of the outputs, given the shortened timeframe for deliverable preparation and review. Table 20 lists other significant procurement issues that arose during implementation and the project's response to these. These have been further detailed in Section C.11.

Table 20: Some Major Procurement Challenges Experienced and Response Measures Applied

Procurement Challenge	Project Response
Some processes having to be reinitiated owing to receiving inadequate number of submissions	• Changing procurement methods to respond to issues arising (e.g., change from comparison of 3 Curricula Vitae (CVs) for socio-economic consultancy to direct contracting) • Advertising as widely as possible
Protracted timeframe for procurement processes	• Requesting NO to direct contract in instances where there were insufficient responses to advertised procurement opportunities • Use of GOJ Procurement System for procurements below US$25,000 • Contracts with RADA and FD for Component 3 implementation • Increasing thresholds for Procurement Committee (PC) approval • Round-robin/walking through PC approvals (not often used)
Bottlenecks with procurements for TIA activity execution resulting in delayed implementation	• Changing from use of PA arrangements to contracts for the Component TIAs, which gave them autonomy, with a focus on deliverables. More efficient methods of procurement within the agencies
Multiple layers of approvals for each step in the procurement process	• To reduce timeframe for approvals: o Advising NEPA PC of upcoming procurements on a regular (monthly) basis and providing updates on in-progress procurements o Where possible, seeking NO for several steps at a time within the procurement process
Budgeted amounts for some procurements significantly less than market price	• Provision of additional funds (IDB TC and GOJ financial support for PES consultancy) • Adjustments to scope, where feasible • Reallocation of funds across components
External consultants having to meet GOJ taxation requirements	• The PEU assisted consultants to meet GOJ taxation requirements.

[42] The MTE (NEPA, 2018) notes that the start date used in the Procurement Officer's reports (when calculating procurement process duration) was taken to be the date IDB first granted no-objection to proceed with the procurement activity. Consequently, the durations specified do not factor in the time for preparation and internal review and approval of the initial procurement document, e.g., a TOR.

61. **A significant shortcoming in the project's procurement management and execution was the delayed adherence with the FA (2014) requirement for the FD and RADA to be engaged under Single Source Selection for the implementation of Component 3 activities** (Section 3.03 (c) of the FA). This requirement, which was also stated in the POD (2013), was only fulfilled post mid-term. Its implementation was associated with significant improvement in project performance as (i) the Procurement Officer's workload was significantly reduced and (ii) the implementing agencies were better able to control and expeditiously execute procurement based on their expertise and relationships with existing suppliers. The delayed fulfilment of the contractual obligation points to major gaps in the execution of the management, oversight and supervision functions of both the EA and the IDB.

62. **Notwithstanding numerous procurement challenges and delays, the PEU completed critical procurements amounting to US$3,676,277, which laid the groundwork for the results achieved over the LOP.** As of November 2020, nine procurements valued at approximately US$310,000 have been initiated, but not yet completed (Table 17).

C.11. Risk Management

63. **Planning for risks was an integral activity of the Y-H Project, from the project design into implementation.** The initial Risk Mitigation Plan (RMP, 2014) included among the approved project documents, identified 13 risks, which were evaluated (probability and impact assessed) and ranked. Of these 13 risks, two were classified as "high", five as "medium" and six as "low". The 2014 RMP also included mitigation strategies for the 13 risks, along with roles and responsibilities for the mitigation responses. Risk management (risk identification, evaluation (impact and probability), mitigation and monitoring) continued throughout project implementation, with other risks identified outside of those listed in the 2014 RMP[43]. Risk planning efforts were documented in the Semi-Annual Progress Report, AOPs and PEU/PM's monthly reports. Risk planning was also facilitated through project meetings involving the full complement or subset of project stakeholders (e.g., PEU staff, PEU/EA, IDB/PEU/EA, TIAs/PEU/EA/IDB, TWG and PSC meetings).

64. **The success of Y-H Project risk management actions varied throughout the LOP, with relatively fair performance at routine risk assessment, but deficiencies as it relates to the timeliness and adequacy of risk mitigation actions.** Risk assessment during project implementation was not always effective or responsive to changing project circumstances

[43] Risk Assessment throughout the project was largely conducted using a Probability Impact Matrix that assisted with the prioritization and classification of risks (low, medium, high). Such efforts were routinely documented in AOP and reports (e.g., monthly reports, Semi-Annual Progress Reports). Risk identification, reporting and tracking was sometimes facilitated as a part of project meetings (e.g., internal to the PEU, PSC, PEU/IDB, PEU/EA).

since mitigation actions did not always produce the desired result and some risks remained unidentified or unaddressed (Annex 16). For example, the project had problem status with the IDB on account of being significantly below expected spend and behind schedule, but prior to mid-term, there is no evidence of major mitigation actions to improve project performance (Box 6). Post mid-term, improvements in risk response efforts were observed, and a recent example of this, is the measures instituted to mitigate the risks posed by the COVID-19 pandemic, which included, for example, online instead of face-to-face training and the EA and NSDMD undertaking installation of the GIS-DSS owing to travel and other restrictions faced by the consultant.

Box 6: Y-H Project Risk Management Gaps

Risks not sufficiently addressed throughout the LOP included those linked to:

- Deficiencies in EA and TIA capacity
- Project assumptions which did not hold true
- Lack of buy-in of political directorate
- Absence of a properly functioning M&E system for the project
- No/limited establishment and use of controls and triggers
- Failure to timely capture and communicate risk information
- Inadequate monitoring of RMPs to ensure performance was as intended or updates made as required[44].

65. **Throughout much of the LOP, risk response actions were concentrated primarily on implementation risks and not on those that could impact sustainability, bringing into question the efficacy of the project's overall risk management efforts.** Risk management, particularly in the latter years of the project (AOP 2019, 2020; Annex 16) had a strong focus on short-term risks. Consequently, insufficient attention was given to long-term threats to the continuation of achievements and benefits after the project ends, though these were considered in the 2014 RMP. Examples of risks that are important to sustainability, but which were not adequately addressed during implementation include: interruption in the adoption of SLM practices by farmers beyond the LOP; low rate of adoption of proposed technologies by farmers; and inadequate stakeholder buy-in for the PES. Section E.2 further examines the risks to sustainability.

[44] The POD (2013) specified that risk plans would be reviewed and updated every 6 months.

C.12. Monitoring and Evaluation Systems

C.12.1 M&E Design

66. **At start-up the Y-H Project had an adequate M&E plan that was referenced in the drafted POM (2013), the FA (2014), and the POD (2013), which outlined the approaches and methodologies to be used by the EA and coordinated by the PEU with the TIAs, to monitor results and track and report on the progress made towards achieving the PDO. The budget included in the M&E plan (2014) was found to be inadequate to execute the M&E requirements of the project.** Project M&E is coordinated by the PEU, with input from the relevant TIAs. The Y-H Project M&E plan prepared at entry provided the project monitoring system and guided the PEU on the measures to evaluate progress in achieving outputs, outcomes and the PDO as defined in the RF. The plan also indicated that M&E findings and data should be shared with key project stakeholders as defined in the FA (2014). The M&E plan included a budget that projected US$42,000 to cover the baseline data collection and analysis was built with the installation of stations across the WMUs by MSJ and the WRA and hydrological modelling training for these TIAs in support of data analysis for watershed decision-making . In addition, the GIS – DSS system will be a tool to support long-term monitoring of key IWRM parameters across the range of technical agencies.

67. **The Y-H Project had a sound RF at design, however several changes were observed across the range of project documents (PIF (2011), POD (2013), PMR (2014)) as the Project moved from design to inception and execution to closure, with limited supporting justifications for the changes made. At EOP the project utilized 19 indicators (with defined annual and LOP targets) to measure results generated at each level of the RF, including two impact, five outcome and twelve output indicators**. Following design, several changes were observed at all three levels (impact, outcome and output) of the RF as the project transitioned from approval (POD 2013) to inception (PMR 2014 and 2015), execution and closure (PMR 2016 to 2019). Justification for the adjustments were not always available for review, especially those preceding the MTE; and in light of staffing changes at the NEPA, the PEU and the IDB. The 2014 PMR recorded several output-level changes that were made based on decisions taken after the Project Inception Workshop held April 12 – 17, 2015, and the preparation of the PEP and the first AOP. Annex 17 details changes in Y-H Project outputs over the LOP. The Impact and Outcome level changes are highlighted in Table 21.

Table 21: Y-H Project Impact, Outcomes and Associated Indicators at Approval and Start-Up

Y-H Impacts and associated Indicators at Approval (POD 2014)	**Y-H Impacts and associated Indicators at Start-up (PMR 2014)**
Impact #1: Reduced rate of deforestation *Indicator: % of deforestation per year*	Removed Removed
Impact #2: Carbon loss avoided and increased carbon sequestered *Indicator: Tons of carbon sequestered*	Impact #2: Tons of carbon sequestered *Indicator (I2.1): Payment for Environmental Services (PES) system functioning at NEPA*
Impact #3: Reduced water turbidity *Indicator: Average hours that the Hope and Yallahs NWC water intake are out of operation due to high turbidity*	Impact #. 1: Reduced soil erosion and siltation in both watersheds *Indicator (I1.1): Sedimentation in waterways*
Y-H Outcomes and associated Indicators at Approval	**Y-H Outcomes and associated Indicators at Start-up**
Outcome #1.1: Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers *Indicator: Approved Watershed management policy that includes biodiversity information.* *Indicator: Number of agencies using DSS according to agreed protocol.* *Indicator: Review of development orders for St Andrew*.	Outcome #1. Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers & **the Blue and John Crow Mountains** *Indicator: O1.1 Watersheds covered by development orders that include land cover and soil management (SLM)* *Indicator: O1.2 Agencies updating data in DSS (Decisions Support System) according to agreed protocol*
Outcome #2.1 Increased financial resources for PES *Indicator: Amount of resources collected by PES in US$.* *Indicator: Number of contracts signed.*	Outcome #2: Functioning pilot Payment for Environmental Services (PES) system *Indicator: O.2.1 Area under contract* *Indicator: O.2.2 Contracts signed*
Outcome #3.1: Improved SLM in project area. *Indicator: Hectares of land in SLM.*	Outcome #3: Improved soil cover and land management (SLM) in project area *Indicator: O3.1 Area of land in soil cover and land management (SLM) program*

68. **Both Y-H Project Impact Level indicators (indicators *I1.1 - Sedimentation in waterways and I2.1 - Tons of carbon sequestered)* were found to be inadequate measures of the expected results.** In the case of *I1.1* the stated means of verification – "*number of gauges installed*" was not a relevant measure of changes in sedimentation level of the waterway, but rather reflects the investment to build infrastructural capacity for water flow monitoring. As such a clear method of evaluating change in sedimentation was not defined. The WRA's PA defined its responsibility for monitoring sedimentation, but a gap in its infrastructural capacity (recognised and budgeted for in the 2012 hydrological assessment report) limited the collection of these data. As an alternative to address the data gap, the PEU conducted sediment modelling.

69. **For the revised Indicator *I2.1: Payment for Environmental Services (PES) system functioning at NEPA* this measure was not found to be a coherent measure for the Impact # 2 *Tons of carbon sequestered*, though recognising the intent to assess progress made in having a functioning PES where farmers and landowners are contracted to plant and maintain trees planted, thus leading to increased tree cover and carbon sequestered. In addition, the AOP change to PES designed (not implemented) means there was no activity generating a result for this indicator.** There was also an RF flaw for *I2.1* as at start-up and during implementation the target was not adjusted based on the findings of the pre-feasibility CSM assessment that established the indicator's baseline. With the changes to the PES activity during implementation, the anticipated results for *area under [PES] contracts* and *[PES] Contract signed* were not generated, hence Indicator *I2.1* could not be measured.

70. **At the outcome level, the RF analysis established that for Outcome #1: *Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers & the Blue and John Crow Mountains*" the two revised associated indicators O1.1: *Watersheds covered by development orders that include land cover and soil management (SLM)* and O1.2: *Agencies updating data in DSS (Decisions Support System)* according to agreed protocols were relevant to assess the outcome.** It is noted however that for O1.1 the Y-H Project's AOPs did not have an output associated with this outcome. The associated component outlined several activities that together did not clearly align with the project's vertical logic. During implementation, delays in several of the component activities, such as the socio-economic and ecological assessments, resulted in the interlinked activities, for example selection of beneficiaries and intervention sites, proceeding without the technical input and guidance envisioned for overall project benefit, and in contradiction to the project's logic.

71. **For Outcome #2: *Functioning pilot Payment for Environmental Services (PES) system*, the two associated indicators *O.2.1: Area under contract* and *O.2.2: Contracts signed* were relevant at design to measure the outcome's results however became irrelevant following approved changes at the output level of the RF. However, TE consultations established that donor restrictions on RM modifications above the output level limited the project's ability to make this adjustment if intended.** Post mid-term, the IDB granted NO in November 2018 for a revision of the project component number two *"Design and implementation of a market-based incentive scheme*" in December 2018 to remove "*implementation*" as the project better understood the time needed to complete the design of the PES, the delays encountered in mobilizing key assessments, the budget limitations, and the looming project completion date. To strengthen the project logic, the RM change, which aligned Component 2 main output – *the "design of the PES scheme"* versus "*design and implementation"* to its outcome, required a change at the outcome level (including its associated indicators). The

further revision would have better equipped the project to measure its investment in the design of a complex multi-dimensional financing scheme within the project's remaining implementation timeframe. For example, the project needed to better plan for and measure the emerging social and political commitments it needed to establish as part of PES design that if not in place would limit the ability to move the PES into implementation.

72. **Outcome #3: *Improved soil cover and land management (SLM) in project area* was found to be well aligned at design and EOP. It's associated indicator *O3.1: Area of land in soil cover and land management (SLM) program* was also found to be relevant at design and at EOP continues to be a strong measure of the adoption of SLM best practices by farmers and landowners.** Iterative planning and adaptive actions taken during project implementation (for example to increase the hectares in the agroforestry programme) resulted in adjustment in component level activities that increased the agroforestry targets for the SLM efforts.

C.12.2 M&E Implementation

73. **M&E implementation for the Y-H Project had several deficiencies, linked to its complex implementation arrangements and a multi-layered reporting system that did not sufficiently build off the M&E plan provided at entry. Partner and project reporting on performance results was done in the absence of a shared framework that not only outlined the requirement for output but also the project's outcome level indicators, informed by updated data collection methodologies, agreed on by the PEU, the TWG and the PSC. There was no evidence of targeted capacity building to support the EA, PEU and TIAs in the execution of M&E implementation requirements.** There were no further updates to the Y-H Project M&E plan after entry. Elements of the plan's requirements were implemented such as the KAPB assessment, however several requirements for impact assessment were not addressed by the PEU with the relevant TIAs at start up and over the LOP. Box 7 outlines major deficiencies identified at EOP that affected adequacy of the Y-H Project M&E implementation and Table 22 highlights key actions detailed in the M&E plan at entry and their EOP status.

Box 7: The major deficiencies identified at EOP

- **Absence of an updated M&E plan** for the project, following design and start-up, that would align with activity or partner M&E plans.
- **Absence of a defined data collection strategy** that detailed the collection and tracking of data for all levels (output, outcome and impact) of the RF, across all partners.
- **Inadequate documentation of multi-year changes to the RF** (and indicator targets) from design to entry and during implementation.
- **Absence of a "PEU-owned" performance indicator tracking system** that monitored real-time status of all project indicators (referencing supporting documentation for validation).
- **Baselines conducted well after the start of associated activities** – for example, KAPB assessment – that limited the efficacy to report on the changes effected by the project for key components, e.g., farmer adoption and change in attitudes and behaviours.
- **Limited M&E capacity building provided to PEU staff and partners** – to secure the training and equipment needed to support monitoring and reporting at all levels of the RF and after project closure.
- **An output-focused reporting to the oversight body** with limited to no assessment of progress at the outcome and impact levels.
- **Insufficient budget to meet the M&E requirements –** as some supporting consultancies exceeded the projected amounts and training and equipment needed for data collection were not budgeted for or addressed.

Table 22: Status of Key M&E Actions detailed in the Y-H Project M&E Plan (2014) at Entry

M&E Action	Status
Further baseline data collection, specifically on distribution of important species of flora and fauna, basic hydrological and meteorological data as well as community perceptions of Integrated Water Resources Management (IWRM) and land use practice will be an early activity during project implementation. **Baseline data gaps will be addressed during the first year of project implementation.**	• KAPB 1 done in 2018 • Annual Communication strategies and actions implemented • Ecological assessments ongoing (started when) • Socioeconomic assessment done in 2019
The project will also implement a system for monitoring carbon benefits of the activities funded under component 1, which will result from increases in number of hectares with forest cover and improved SLM practices. **Carbon measurements for reforestation/agroforestry of degraded areas will be done at the start, mid-term, and end of the project duration. This activity will be under the responsibility of the Forestry Department, in collaboration with RADA.**	Baseline – completed (date) Mid-term – not complete EOP – initiated by consultant (not FD)
The effectiveness of the extension program will be measured by monitoring the effectiveness of training activities to assess percentages of farmers that received extension services that have adopted SLM practices	Data collected using EOP surveys completed by the PEU. M&E plan methodologies not used.

M&E Action	Status
Utilization of approaches to assess the impact of the project on the "*Adoption Rate*" and "*Extent of Adoption*" of SLM and GAP practices by farmers in the WMUs and the "*Impact on Agricultural Yields"* of the extension service activities promoted by the project Data for these calculations will be obtained from simplified surveys collecting information of agricultural production (inputs and outputs used as well as their on-farm prices, and implementation of agricultural conservation practices and/or improved agriculture). **These surveys will be done as part of the KAP studies with the questions to be assessed in the KAPs annexed to the M&E plan.**	Not completed While an attempt was made to collect relevant data in the 2nd KAPB and the M&E for the FFS, survey data not collected or tracked as specified
Establishment of treatment and control groups of farmers in the WMUs - *The treatment group corresponds to the farmers upstream from the NWC water intakes in both watersheds which will be the target of the extension effort financed by the project* - *The control group is comprised of farmers located downstream from NWC water intakes in both watersheds*.	Controls and treatment groups not established
Midterm Evaluation	Completed in 2018
Final Evaluation	Initiated in 2020

74. **The POM's M&E requirements that semi – annual and annual reports must include the results matrix, the relative progress of targets and where possible, information on the progress on the PDO, was only met at the output level. Independent evaluations outlined in the M&E plan were successfully completed.** Across the Y-H Project technical reports the project performed well with activity and output level monitoring and reporting. They reported the challenges and constraints faced and any recommended adaptive management action being taken to move implementation forward. However, there is limited evidence of systems and actions taken to set baselines, provide periodic reports on the project's outcome level indicators and to assess and validate the Y-H Project's vertical logic and associated assumptions, as implementation progressed. In addition, where the TIAs had capacity gaps for the collection of key data sets such as the instruments for measuring and modelling sediment levels or the technical capacity to monitor CSM, this was not recognised and addressed sufficiently early in the project to support its M&E requirements. The mid-term evaluation (MTE) completed in May 2018 provided several recommendations that were adopted (over 12) by the EA, PSC and the PEU. The MTE also reported on progress using the GEF tracking tool.

75. **The IDB PMR and project reporting documented several instances where corrective actions were taken to address challenges at the output level, however this was not reflected at the outcome and impact levels.** The PEU led several efforts at EOP to generate data for its outcome and impact level indicators. These efforts included SWAT modelling to generate sediment modelling results, re-engagement of the CSM modelling consultant to complete the

endline assessment and engagement with the NEPA for a status update on the provisional development orders.

C.12.3 M&E Sustainability

76. The project also undertook two main efforts designed to make provisions for continued monitoring of outcomes and impact after project closure with the integration of an M&E plan within the WAMM and the PES design. Both have the potential if implemented, to provide data that can report on farmers' continued application of SLM measures and the associated ecosystem benefits. The project's investment in farmer training through the agricultural extension programme provides a mechanism for continued monitoring of replication and scale-up of SLM adoption across the WMUs. Based on the timing of the completion of the WAMM consultancy, the Y-H Project did not have the opportunity to align with and test the recommended WAMM M&E framework within its LOP in order to further inform learning and adaptive management. Capacity for hydrometeorological data collection was built with the installation of stations across the WMUs by MSJ and the WRA. In addition, the GIS – DSS system will be a tool to support long-term monitoring of key IWRM parameters across the range of technical agencies.

C.13. Adaptive Management

77. **Evidence of a structured, iterative process of robust decision-making in the face of various risks and uncertainty and ongoing opportunities for reflection and adjustments for the Y-H project is limited**. **Notwithstanding, the project has been responsive to challenges and constraints for which adaptive actions are evident.** The PEU produced the "Adaptive Management Strategy Yallahs-Hope" (undated), which documents the project's efforts at adaptive management. There is no other record of focussed attention to adaptive management or a structured approach to identifying adaptive actions. The TE identified adaptive actions taken by the PEU and other project stakeholders to respond to issues and challenges and these are presented in Table 23.

Table 23: Y-H Project adaptive actions identified

Project Need	Adaptive Action
Balancing budgets	Budget transfers from Component 3 to Components 1, 2 and 4 based on identified need.
Achievement of Targets	Shift major focus on Component 3 "areas replanted through reforestation and agroforestry" from reforestation to agroforestry, to ensure that target of 466.30ha was achieved.
Exceeding Targets	Strong performance of RADA with the target number of FFS resulted in doubling of the target and increasing reach into other communities based on farmers' demands.

Project Need	Adaptive Action
Adjustments to the FFS programme to meet the needs of the participants	Adjustments made included: • Scheduling to allow for other farm activities • Slowing of pace of application of innovations to accommodate female farmers • Repeated some sessions as persons dropped out and new persons attended • Integrated the fruit tree programme (agro-forestry) • Provided irrigation outlay to address risk from raw water unavailability.
Facilitating International Consultants	GOJ paid the GCT on international consultancies to address the double taxation issue. The project liaised with the Tax Administration, Jamaica to assist with obtaining a Tax Compliance Certificate (TCC) for consultants.
Merging Component activities	Merged Component activities such as GIS-DSS and IWRM training; ecological assessment and bio monitoring; and hydrological, geomorphological and meteorological assessments for greater efficiency.
Available time for consultancy reduced	The PES consultancy was reduced from 3 years to 1.5-2 years duration. The consultants agreed to the reduced timeframe for completion of 23 PES design deliverables and implemented them simultaneously instead of sequentially.
Procurement methods	Changed procurement methods to respond to issues arising.
Procurement Management	Projectized the production of Ecosystems Services Incentive Programme Launch
Procurement process	In the initial stages of the project, in response to absence of an internal procurement manual in the EA, the PEU developed procurement process flows to resolve conflict experienced internally while trying to balance IDB, GOJ and NEPA internal processes. These flows served as a guide for PEU tasks.
Improving Procurement efficiency	At the beginning at each month, PEU/Procurement Officer drafted a short report advising NEPA procurement of all the procurements the PEU planned to undertake for the month. PEU also provided updates on procurement processes where there were overlaps from one month to the next.
Use of Country Procurement Systems	Use of the National System for procurements below 25,000 USD helped to improve procurements efficiency, e.g., with GOJEP they can move forward with one quote for shopping method. Before that (Adoption of National System), if they got one quote, they would have to go back out, or seek permission from IDB to accept less than the required number of quotes, ensuring to provide a justification.
Improving Procurement efficiency	The threshold for Procurement Committee (PC) approval was increased to 500,000 (from 300,000). This allowed the PEU to send through more procurements below the threshold (these would not have to go to PC). This in effect reduced approval timeframe. Additionally, although the PC met every 2 weeks, if there were urgent procurements, a special meeting of the PC was convened or review facilitated by round robin (this was not done often).
Conducting market research to better estimate costs	Market research was conducted especially when bids came in very high. This was accompanied by internal and external checks and adjustments to estimated costs In the Procurement Plan
Rescoping to respond to high bids	For the ecological assessment consultancy (UWI), the bid was still higher and so they had to rescope with more targeted interventions to ensure scope and timeline could fit into what the project could afford.

Project Need	Adaptive Action
Improving TORs to prevent need to re-advertise	Provided more focused bidding documents to prevent the need to re-advertise.
Improving procurement efficiency	Strategies employed to minimize delays since procurements had to go through many approval points included: With guidance from IDB, tightened submissions and ensured procurement codes, source of funds were clearly stated/placed on the document (even on cover) for ease of processing. IDB also provided for a wider NO, for example, to advertise, do evaluation, conduct negotiation and proceed to contract signing, depending on the activity. For ecological assessment the IDB provided approval to engage and proceed to contract signing.
Addressing poor quality and untimely submissions from consultants	Although the TWG should have been established early in the project, its eventual formation in 2018 provided a layer of quality control for consultants' deliverables, resulting in improved quality and timeliness of deliverables. Expertise from NEPA and other agencies was co-opted as needed. The TWG worked well in a face-to-face setting. PSC agreed to institute a process to hold payment until deliverables were finalized First review of deliverables by the PEU reduced the burden on the TWG. Workshops were utilized for reviews and validation for major deliverables.
Use of contracts for Component 3 implementing agencies	Although the FA (2014) stipulated SSS for Component 3 implementation and this was not initially followed, late adjustments in 2018 to align with those requirements resulted in greater efficiency, acceleration of the activities and increased achievement of outputs.
Restructuring of the PSC	In 2018, PIOJ assumed chairmanship of the PSC, providing neutral, high level leadership and guidance, strong negotiation skills and relationship building. Stakeholders felt this was a marked improvement, with more focused and targeted meetings and decisions made.
Partner re-engagement post mid-term	The Project sought to re-engage a partner, after a previous failed attempt. The focus was deliberate on aligning with the agency priorities and activities to secure success, while keeping in mind the partner's own mandate and ensuring the requests were not overly ambitious and outside of the partner's remit.
PES capacity support from the IDB	Recognizing its own limited capacity for PES and the needs of the GOJ, the IDB provided external PES support to the Project, through a PES consultant. The IDB also assisted with filling the PES budget gaps through a US$ 300 000 TC.
Improved EA support to the project	NEPA's efforts to support the PEU in implementation included: • Reporting to a Senior Projects Manager • Including Y-H Project activities in relevant NEPA staff work plans • Listed activities as NEPA KPIs • Director for the Environmental Management Division tasked with monitoring Y-H Project outputs and signing off for payments along with the Director of Projects.

78. **Change control has been limited with no evidence of a systematic approach to managing all project changes**. Inadequate documentation made it difficult to understand the justification for changes. An example is the decision to conduct two additional FFS training, having met the target for the project. Although this expansion was identified as an adaptive action in response to farmer demands, there is no evidence of review and assessment of the initial training, so that lessons learned could be incorporated, nor alignment with Component 2 activities and future PES implementation.

C.14. Environmental and Social Safeguards

79. **Given its objective to improve the conservation and management of biodiversity and the provision of ecosystem services in the Yallahs and Hope Watersheds, the Y-H Project was assessed and classified as a category "C"** [45] **operation under the Bank's Environment and Safeguards Compliance Policy (OP-703).** TE reviews and consultations have revealed that project operations have contributed to improved environmental and social performance in areas of the target sites (e.g., reduced erosion and land slippage, reduced fires, and improved yields leading to enhanced livelihoods for men and women).

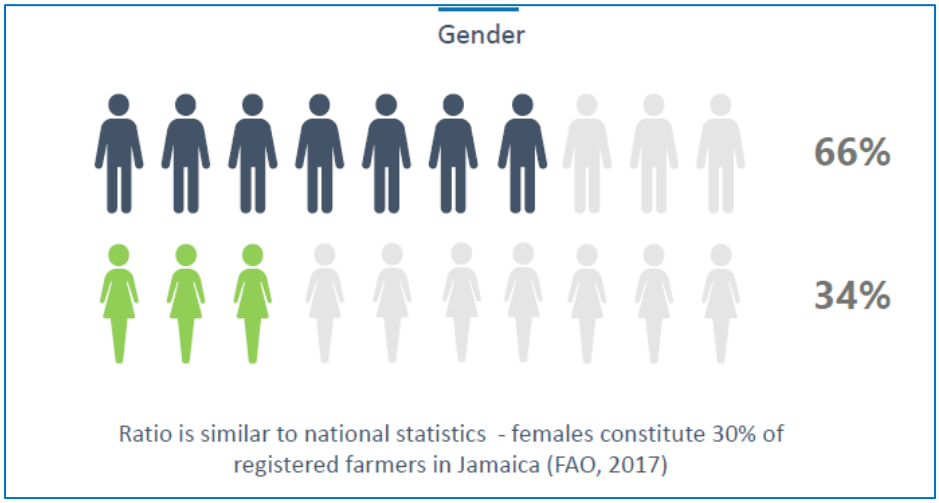
80. **Notwithstanding, two key environmental and social performance issues, natural disasters and land tenure, were not adequately addressed in project design nor during implementation**. The Safeguard Policy Screening conducted in 2011 (IDB, 2011) identified the need for further analysis of natural disaster risk, however there was little indication of this consideration in the design documents and in the 2014 RMP, neither was there a plan for mitigating disaster risk during implementation. Additionally, the Rural Development Specialist Report (Smith, 2012) indicated that the issue of insecure or completely lacking land tenure reported throughout the watersheds should be acknowledged during the Project's design. Furthermore, the POD (2013) indicates that "a focused program that provides appropriate extension services and adequate financial incentives can induce changes in land use and agricultural practices as long as the following conditions are met: farmers have some tenure security or land use rights that allows them to attempt new techniques for a period long enough to recover investment costs…", however there is no evidence that the project actively sought to engage farmers with tenure security or assist farmers without security to obtain some sort of land use rights prior to their involvement in the technical assistance programme.

[45] "Operations that are likely to cause minimal or no negative environmental and associated social impacts will be classified as Category "C." These operations do not require an environmental or social analysis beyond the screening and scoping analysis for determining the classification. However, where relevant, these operations will establish safeguard, or monitoring requirements." – IDB's Environment and Safeguards Policy, 2006

C.14.1 Gender Responsiveness

81. ***Ad hoc* gender considerations were identified in the Y-H Project but a structured approach to gender mainstreaming was absent**. TE reviews of design documents found that the Communications Strategy (2012) included gender considerations but there was no evidence of a gender analysis and ensuing gender strategy for the project and/or gender responsive measures incorporated and reflected in the RF[46] prior to GEF CEO endorsement. However, during implementation, the project conducted a socio-economic assessment that identified specific gender issues including the finding that across the watershed there was a 66% to 34% male to female involvement in agriculture (Figure 15).

Figure 15: Male: Female Involvement in Agriculture in the Y-H Project WMUs



Source: Y-H Project Socio-economic Assessment; D. Campbell, 2020

82. **The socio-economic assessment also found that females have a higher level of dependence on ecosystem services such as water for cooking and washing (Campbell 2020)**. TE consultation findings indicated that the FFS sessions had significant female participation (40%) (RADA, 2020). RADA also indicated that in the implementation of the labour-intensive land management innovations, the extension leads were sensitive to the constraints of the female group members (especially those that were older). Consideration was also given to the scheduling times for field schools to recognise gender and other factors that limited consistent attendance. In spite of the actions taken, there was a need for a more structured integration of gender considerations (reflected in a gender strategy) over the LOP. Both the baseline KAPB and the socio-economic assessments, which were delayed, were opportunities to generate gender-related information to support decision-making. Where applicable, activity level implementation reports and M&E plans should have reflected disaggregates on

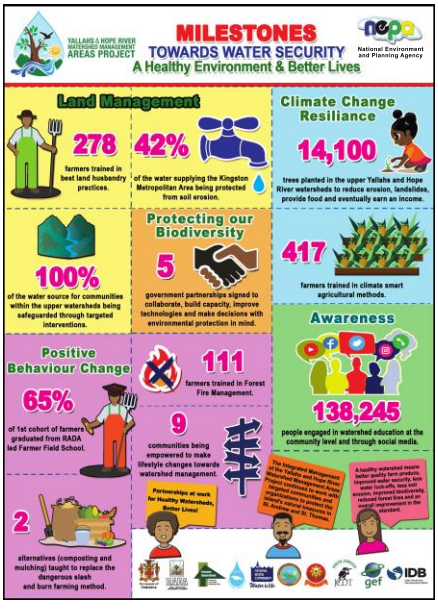
[46] Actions, gender-sensitive indicators and sex-disaggregated targets

male and female involvement and the benefits derived. Data on agency-level participation in project activities could also be disaggregated by gender.

C.15. Communication and Public Awareness

83. **Fair attempts at project communications and visibility were evident and maintained throughout the Y-H Project LOP**. Although a CS objective was related to behavioural change (CS 2018), no efforts were in place to measure change in behaviour, especially in light of the absence of the baseline KAPB study at start-up. Communications and public awareness were guided by the Integrated Communications Strategy (Sharrier, 2012) developed at design and updated in 2017 when the Communications Specialist was hired. The NEPA provided backstopping and filled capacity gaps prior to hiring a Communications Specialist and provided basic support at other times when there was a need. Project visibility was evident on some levels, with branding achieved. However, the nature of the project and what it was trying to achieve was not well articulated and by extension not well seen by stakeholders. On the level of incorporation of the PES as a financing mechanism for IWRM, the project did not achieve the level of visibility required to elevate it based on its importance.

84. **The Communications Strategy (2012, 2017) was well-aligned to the PDO and included cross-cutting themes such as gender, private sector and community level partnerships and was implemented through four annual Communications Plans (CP)[47] (2016-2019).** A strength of the strategy was its focus on coordinating and collaborating with existing programmes such as those in schools, linking the programme, where possible, with other environmental initiatives currently being planned and/or implemented by CBOs, NGOs and Government Agencies, such as the Pilot Programme for Climate Resilience project that was being implemented by the PIOJ, and building on organizations' efforts to maximize programme reach (NEPA, 2017).



85. **The baseline KAPB study was expected to inform the communication programme and against which its efficacy[48] would be monitored; however the lateness of the baseline KAPB affected the completion of the communication programme.**

[47] None identified for 2020 but communications and public awareness actions are ongoing e.g. EcoSIP symposium in February 2020; preparation for Project close out.

[48] The KAPB was also expected to provide information for indicator development and target setting.

Consequently, the key communication learning information needed for development of the communication programme was gleaned from previous environmental projects in the project area. The 2017 CS included a draft Communications Results Framework but had a disclaimer as it awaited the baseline KAPB report.

86. **All four planned annual Communications Plans[49] were developed and implemented to include a range of activities and used a variety of tools for the target groups that produced positive feedback and enhanced visibility. TIAs were supportive and participated in the activities such as expos and road shows but the linkages that were expected with TIA communications units were absent, a consequence of this was the missed opportunity for maximizing the reach and resources.** Although the project did not adequately integrate with TIA's public relations departments, there was evidence that partner agencies led and participated in community sensitization, such as one held in July 2019, with FD as the lead.

87. **Development of the annual Integrated Communications Plans resulted in implementation of a number of activities that increased awareness and maintained visibility of the project within the project sites and more broadly at the national level.** Communications, public awareness and visibility activities have been implemented since project start-up and continues to be implemented. Highlights of activities implemented are found in Annex 18. Noteworthy is that the project had two Communications Specialists[50] (Annex 19) and during the transition between the two, NEPA provided continuity support through its Public Relations Officer.

88. **The Communication Plans identified target project stakeholders for communication interventions but efforts during implementation were limited to some of these identified target audiences.** The focus of the project's communications activities was limited largely to the stakeholders on the ground, with some effort at mass media communication. There was no focus on higher level stakeholders that were important for final policy level approval. No briefings on the project were done as was detailed in the POD (2014) to build their awareness and readiness for participation and their buy-in for project elements like the PES mechanism. Similarly, there was an expectation for annual briefings with key stakeholder groups including the political directorate, but there is no evidence of these annual sessions held. There was however, an attempt by the PEU and the IDB to engage a Minister of Government for project championship but this did not materialize. There was also a missed opportunity with a

[49] 1: July 2016-June 2017; 2: January-December 2017; 3: January-December 2018; 4: January-December 2019.

[50] CS 1 developed and led implementation of CP 2018; CS 2 developed and led implementation of CP 2019. There is no plan for 2020 but activities are ongoing.

targeted approach to engage one key project beneficiary, the KMA residents, on the PES through information included in water bills, Communication tools were also not effectively used to garner support from various wider GOJ stakeholders to minimize the impact of the various challenges encountered throughout implementation. For example, a recurrent issue with hiring international consultants was the need for a Tax Compliant Certificate, which proved to cause serious delays, but there were no efforts to build cooperative support from the TAJ.

89. **Impact of the CS has not been assessed despite the extensive set of activities implemented throughout the LOP**. At the time of the TE, a second KAPB was underway and data and information were not yet available to substantiate the efficacy of the Communications Plans and impact of the plans that have been implemented.

C.16. Technical backstopping and support from the IDB, GEF Administrator

C.16.1 Quality of IDB support for design and approval

90. **During the phases between conceptualization to approval the IDB provided significant support to the GOJ to prepare the project document, get approval from the GEF and establish an agreement with the GOJ.** The IDB, through its own staff and a set of design consultants, provided capacity for project development and a range of important technical areas pertinent to the PDO (Box 8).

Box 8: Design expertise provided by the IDB

- Design team lead
- Specialists in:
  - hydrology,
  - watershed management,
  - biodiversity,
  - communications,
  - Socioeconomics,
  - Economic surveying
  - Economic analysis,
  - mitigation and carbon benefits assessment.
  - PES
  - Agriculture and rural development

91. **The IDB made effort to ensure that key partner agencies were engaged throughout the project design process**. From review of Aide Memoires (IDB 2012, 2013) and TE consultations, evidence exists that TIAs were involved in iterations of the project design documents; provided data and information for various studies; conducted required assessments (e.g., statistical series for Y-H Rivers by NWC and five-year cash flow for three crops by RADA). There was no evidence of the eligibility criteria for selection of farmers for demonstration projects by RADA that should have been provided at

design nor reports on the use of these criteria[51] for selection of the farmers during implementation. The final POD (2013), the POM (various iterations), and the FA (2014) were documents that many stakeholders were either not aware of or not very familiar with. Further to this, there was no evidence found that prior to project approval by the GEF in 2013, that there was a workshop of key partners for final validation and agreement on the documents to be submitted. This was a missed opportunity to have defined next steps for the GOJ partners, such as mainstreaming activities in their respective plans; commencement of dialogue on specific activities, among others. The PMR, IDB's annual project monitoring tool, was not identified in the FA (2014) and was also a document the PEU was not familiar with, and although for use by the IDB, early introduction to the tool could have provided guidance to the PEU for alignment[52] of their reporting and understanding of the importance of key elements of the reports.

92. **An institutional assessment (Garrett, 2011) of the NEPA in its capacity as EA, was conducted using the IDB's Institutional Capacity Assessment System (ICAS) methodology and involved the NEPA staff in the process but next steps from its conclusion and seven recommendations were not evident**. Although it was noted by a former Task Team Leader (TTL) that there was no funds for capacity strengthening and that any such investment in capacity would have to be through a separate project or with support from IDB, there was no follow through with a joint work plan between the IDB and NEPA to implement priority recommendations[53] that were essential for project implementation.

C.16.2 IDB's supervision of the Y-H Project Implementation

93. **The IDB supervision of the Y-H Project was evident in its efforts to conduct annual technical review Missions[54]pre mid-term review, conduct multiple virtual and face-to-face monthly and ongoing meetings with the PEU and attend initial PSC meetings in an observer capacity.** Where necessary, the IDB also held special meetings with stakeholders (for example, the NEPA, FD and RADA to discuss site selection and replanting issues) and facilitated support where possible to advance activity implementation.

[51] Especially the conditionality on ability to demonstrate land title or land rights use for a minimum period of 5 years.

[52] The IDB's monitoring indices could have guided the EA for its own tracking and triggers, as there were no triggers instituted on the GOJ's part.

[53] Seven recommended areas for strengthening: (i) long term planning perspective; organizational development; (ii) strengthening the governance structure of NEPA; (iii) streamlining legislation and consolidation of entities under NEPA's umbrella; (iv) personnel management; (v) deployment of the GMAX platform and NEPA financial systems for the project; (vi) development of an internal Procurement Manual.

[54] For example, May 30-June 2, 2016; April 24-28, 2017 as indicated in Aide Memoires.

94. **The multiple transitions of TTLs and supporting Operations Analysts (OAs) over the LOP impacted smooth implementation of the project.** During the transition periods, there were lags in communication between the IDB and the PEU. Responsiveness of the IDB was an issue in 2017 when the Project's TTL was transferred, and the project was in a transition to the new TTL and OA, also resulting in loss of momentum. Changes in IDB's archival systems also contributed to gaps in project institutional memory. The IDB was responsive in providing NOs; instances of delay were as a result of requests for additional information or document revision by the PEU.

95. **The IDB worked with the PEU to identify expertise for activities, especially where they did not exist locally and where support was not available in-house on the IDB's team, but could have been guided more closely by what was already done in design to determine the specific support required and could have shared experiences with other projects for which information was available and evaluations conducted.** Guidance was provided on an ongoing basis on procurement, especially where changes to procurement methods were warranted to advance technical activities. For example, approval to switch the procurement methodology for the socioeconomic consultancy from Selection Based on Qualifications for that of a firm to Direct Contracting of an Individual Consultant. The IDB did not consider the need to streamline the planned rate of value creation to procurement limits of the GOJ system.

96. **Recognizing its own in-house PES capacity limitation, the IDB hired a consultant to work with the TIAs for development of the PES design TOR, among other things**. However, the appropriate link was not made, by the consultant, to the PES design work and document from the design phase. Furthermore, the IDB would have had access to a repository of PES projects and for which evaluations and completion reports were available. The IDB could have pulled from its own archives and accessed the donors' databases and shared these with the EA/PEU.

97. **Throughout the project's life, implementation efforts and results reporting focused largely at the output level. The IDB's attempts to improve project focus on outcomes and impacts were not well articulated and did not result in improvements in RF monitoring.** The limited focus on the entire RF throughout most of the LOP was also evident from the absence of a defined and partner-integrated M&E Plan, resulting in significant gaps in data for RF analysis at EOP. There was also no evidence of M&E support to fill the M&E capacity gaps in the PEU and TIAs. Project progress updates discussed at PSC meetings were almost always focussed on the output level and it was only near project closure that discussions evolved to the entire RF.

98. **The IDB provided backstopping for specific activities, both in terms of technical capacity and financing.** For example, in design of the reforestation component, technical support included selection of sites and species for reforestation and feedback on the silviculture plan. The IDB also provided expert facilitation for the project's Inception meetings and PES consultancy and was supportive in securing the additional US$300,000 through a TC when there was an identified shortfall. Support has also been provided in preparation of TORs and provision of technical assistance (e.g., CSM). The IDB also supported the PEU's application in the second edition of "IDB's Superheroes" competition, which saw Jamaica emerging in the top eight projects out of 82 and was showcased during the "Knowledge Week" in Washington, DC in September 2019. The basis of this achievement was the resilience of the project and its stakeholders to overcome the challenges encountered to re-emerge and achieve results post mid-term.

99. **The results of the IDB's annual PMR for monitoring and tracking of project progress and status were communicated to the GOJ during annual IDB Portfolio Review meetings. Based on the data input into the PMRs, the project had "Alert" status followed by three years of "Problem" status, which had significant implications and the slow pace of corrective actions taken did not allow for significant improvement until post mid-term.** The annual PMRs contained specific monitoring indices that provided an indication of the status of the project (Table 24), given the absence of a project trigger mechanisms. The IDB used its annual Portfolio Review sessions with the GOJ to discuss these findings and articulate the need for improvement. The GOJ/EA reporting did not reflect established parallel project management indices to track project progress and take corrective action. Consequently, GOJ/EA efforts to take corrective action towards improving project status was slow and significant adaptive actions not seen until post mid-term.

Table 24: Project Status Using IDB's Monitoring Indices

Stage 2: After Eligibility					
Indicator (I)	**2015**	**2016**	**2017**	**2018**	**2019**
Accumulated disbursements to country's historic disbursements	ALERT	PROBLEM	PROBLEM	PROBLEM	ALERT
Cost Performance Index (annual - CPI(a)	ALERT	SATISFACTORY	SATISFACTORY	SATISFACTORY	SATISFACTORY
Cost Performance Index – CPI	ALERT	PROBLEM	PROBLEM	PROBLEM	PROBLEM
Schedule Performance Index – SPI	ALERT	PROBLEM	PROBLEM	PROBLEM	PROBLEM
Schedule Performance Index (annual)- SPI(a)	PROBLEM	PROBLEM	PROBLEM	SATISFACTORY	SATISFACTORY

Source, PMRs, 2015-2019

D. Impact

100. **The analysis of Y-H project impact was limited by the absence of key datasets defined in the project's M&E plan at start up.** Using proxy analyses, namely the EOP Survey (PEU, 2020; Annex 20) and SWAT modelling assessment (Annex 21), the TE found that the Y-H Project used its extension programme to change farmers' agricultural practices and also reported a reduction in levels of sedimentation in priority watershed locations. The project also made attributable contribution to improved coordination across watershed management partner agencies, with greater science and data-driven decision-making.

D.1. Achievement of objectives

101. **The Y-H Project implemented a mixture of policy and regulation development, technical capacity and awareness building, and cross agency coordination through the TWG and the PSC, which contributed to the intended result of Outcome 1, while supporting the effective implementation of the other project components.** TE consultations with project TIAs such as the WRA, RADA and NWC verified the value gained from the multi-agency response to watershed management that the project utilized (Box 9). Stakeholders are working together more effectively and better understand their roles – especially as it relates to monitoring of ecosystem services such as water flow, water quality, and vegetative cover. The ongoing efforts to create synergies between the updated watershed policy and the water policy will continue to strengthen the enabling environment for watershed and water resource management. An updated watershed policy that, among other things, incorporates lessons from the experience with this multi-faceted project will serve the stakeholders well through the guidance and direction provided for IWRM.

Box 9: Stakeholder Perspectives on the PSC and TWG

Testimonial 4: The PSC has always sought to allow for cross coordination; however, following the re-scoping and downscaling of the project inter-relationship and coordination was improved and maximized. The Autonomy given to RADA and the Forestry Department to replant, also allowed for deeper partnerships which allowed the project to surpass its reforestation targets; to plant over 400 hectares of trees.

Testimonial 5: The PSC has allowed for the inter-institutional coordination and collaboration especially between the Rural Agricultural Development Authority and the Forestry Department; NEPA and Water Resource Authority; however the private sector was not whole-solely included in the collaboration but was being considered for future involvement.

Testimonial 6: The Technical Working group has provided for a depth of inter-relation between agencies over detailed matters of consultancies and the quality of work produced by consultants. For example, the TWG was hands on in ensuring that the Consultant for the PES Scheme produced what was anticipated, through rigorous reviews. The same treatment was applied to several other consultancies, even to the extent of engaging around tight deadlines to ensure quality work.

102. **WMU farmers learned and applied SLM practices due to their involvement in the Y-H Project FFS extension delivery programme.** The effectiveness of the extension program measured through data provided by the PEU-administered EOP survey[55] determined that the percentage of farmers in the training programme who went on to apply SLM practices learned on their farms was 62%. These farmers applied one or more SLM innovations on their individual farms using the information learned in the farmer training programme (see Figures 16 and 17). Box 10 highlights the experience of one FSS beneficiary.

Figure 16. Y-H Project trained Farmers implementing SLM best practices on farms

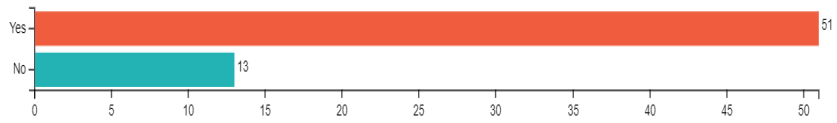
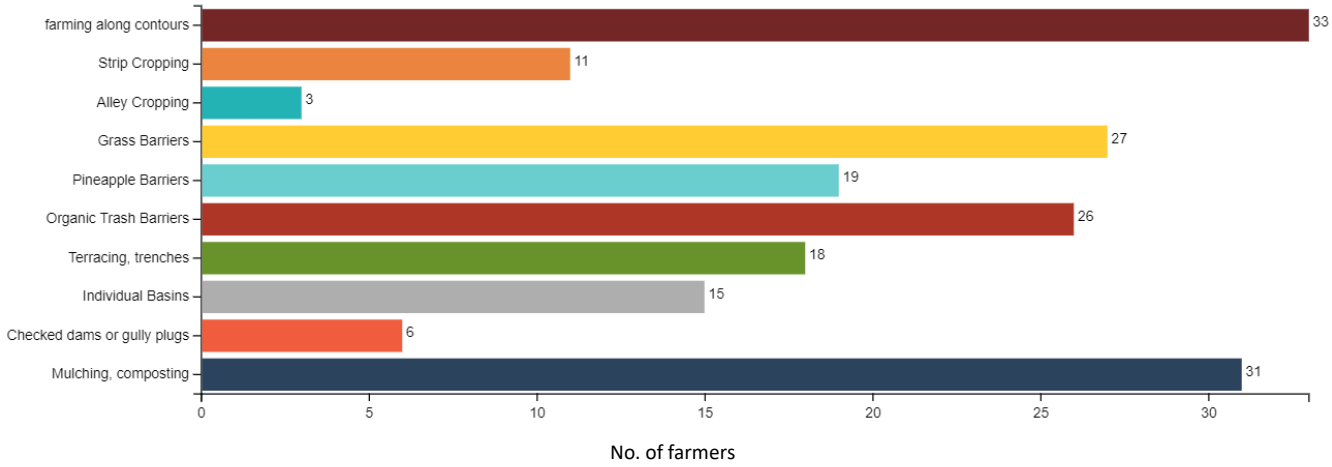


Figure 17. Y-H Project GAPs being adopted by project supported farmers in the WMUs



[55] Neither the adoption rate, or extent of adoption; as well as the impact of technology on yields defined in the start-up M&E plan could be reported as the project did not collect the required data sets and set up the required controls.

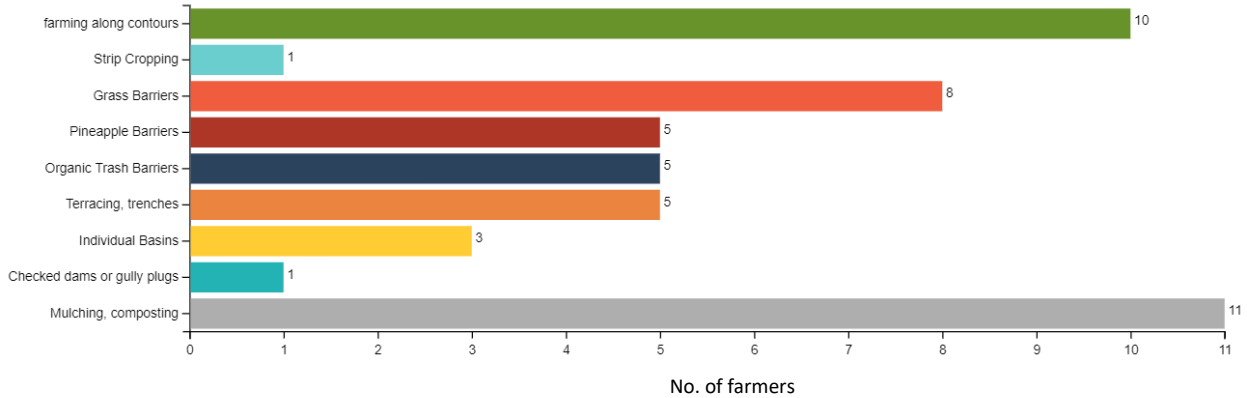
Box 10. St. Andrew Farmer Now Applying Good Agricultural Practices Learnt in Y-H Project Farmer Field Schools (FFS)

Garfield Willis is a cash crop farmer who grows scallion and other crops that he supplies to the neighbouring market in Kingston and St. Andrew. Before his participation in the Y-H Project sponsored Farmer Field School (FFS) his yearly crop showed low yields linked to a mix of factors including low soil quality, water availability and limited crop production practices. Then came the Y-H Project field school, implemented by the Rural Agricultural Development Authority (RADA), where he hosted one of the demonstration plots where the field school members learned in the field the practical measured to improve production through the application of Good Agricultural Practices that also protect the environment. From the knowledge learned in the field school sessions Mr. Willis was able to install an irrigation system that addressed the problems with water availability, plant pineapple as a vegetative barrier crop (agroforestry innovation) that not only protected that land from land slippage, but has good demand in the market. He also used individual basins to reduce tillage and also help with water conservation. Over 8 months after his training program, Mr. Willis, is among several farmers reporting an over 60% increase in his crop yields that translates to increased earnings from his farm. He was also able to continue to water his crop during the extended drought using the drip irrigation system that increased his water use efficiency by over 80%. He thanks RADA and the Y-H Project team for the support, indicating that this area needed something like this for the farmers for a very long time.

- TE Consultations (2020)

103. **There is evidence of replication with transfer of SLM practices to non-FFS participants' farms**. The EOP survey also recorded instances of replication as other farmers request assistance from FFS members to transfer the best practices to their farms (see Figure 18). Best practice adoption was reported to be incentivized by the livelihood value realized by the farmer and the farm household. Farmers applying best practices were found to have increased productivity by over 60% (RADA, 2020).

Figure 18. Y-H Project GAPs being adopted by other farmers in the WMUs



104. **Through SWAT analysis, the PEU was able to demonstrate an 8% reduction in sedimentation attributable to Y-H Project activities targeting land use change.** The 8% level of reduction reported is limited by the availability of sediment data within the target watersheds that would serve to calibrate the SWAT model.

D.2. Unintended impacts

105. **Partnerships were essential to the achievement of Y-H Project results over its LOP**. The ALAF working group emerged through collaboration among Component 3 project partners and other key stakeholders that provided technical guidance in the absence of a TWG. Early in project implementation the project benefited from FD's partnership with the Jamaica Fire Brigade to support the delivery of forest fire management training sessions to WMU residents in five communities - Penlyne Castle, Windsor Forest, Windsor Castle, Content Gap and Westphalia. This was complemented by three anti-burning road shows. Burning threatens both the natural resources and other infrastructure in the WMUs. Based on pre and post road show surveys that were conducted, the awareness of the anti-burning legislation moved from 30% prior to intervention to 83% in Mavis Bank and from 30% to 77% in Papine. The trainees were able to use the knowledge and skills gained in fire management to save hectares of forest and property when a fire threatened the area subsequently.

E. Sustainability

E.1. Sustainability Considerations

106. **Government ownership and commitment to the PDO was implicit in the project design and the implementation strategy. This commitment involved continuity of project benefits beyond the LOP, as impacts were expected to be fully derived in ten years.** In order to realize the PDO, project design assumed the partners had sufficient commitment to and ownership of project activities and their ensuing outputs, outcomes and impacts. Furthermore, for these to be realized, activities would be mainstreamed in the partner agencies' plans and programmes.

107. **At the time of this TE, the PEU had drafted a sustainability plan, that reflects some activities that will transition from the project to longer term programmatic actions. The Plan, however, lacked cohesion and a defined logic (similar to the intervention logic of the project) as the basis for the transitioned Y-H Project that defines commitments to sustain action and scale up results.** The draft sustainability plan has not yet had the benefit of partner input and validation that are essential to its success. Critical elements of a sustainability plan that are outstanding include a thorough analysis of risks to the activities

contemplated as well as considerations of environmental and social safeguards and other elements that could impact the management of the Y-H WMUs (e.g., disaster risk and climate change). Important to Y-H cross-agency sustainability planning is incorporation of lessons learned from project implementation. Also critical to the plan's implementation is structured institutional arrangements that include the retention of the capacity built in the PEU as well as the oversight and guidance provided by a revamped strategic level structure similar to the PSC and technical support of a TWG. Specific activities in the draft sustainability plan have been costed but a comprehensive budget has not yet been completed. Project execution costing can provide useful data for completion of the planned budget. Notwithstanding**,** both the TE consultations and review of agencies' plans and programme documents confirmed TIAs' commitments that:

- Secured the data collection from, and maintenance of, equipment granted to the WRA and the MSJ to support watershed management decision making and PES monitoring.
- Continue technical assistance and resource support to farmers through the RADA parish-level programmes in the WMUs.
- Secured maintenance of replanted/rehabilitated forested areas through integration in FD's recurrent maintenance budget.
- Continue fire prevention and management training within the confines of FD's Fire Prevention and Management Plan.
- Utilize the GIS-DSS, housed at NEPA, to inform IWRM decision making.
- Link PES implementation steps to WAMM modules coordinated by NEPA.
- Implement the NEPA-coordinated WAMM M&E Framework with TIAs, based on their specific roles and responsibilities for the PES.

108. **The PES, as a financing mechanism for IWRM, is a core strategy for long term sustained action in the two WMUs but its financing role is limited by the incompleteness of project actions.** The second major element of sustainability integrated at design was the PES mechanism, for long term sustainable financing for IWRM. However, the following outstanding Component 2 actions will limit the intended long-term benefit expected to be derived from the project:

- Final stakeholder sign-off on the PES structure.
- Identifying a champion for the PES.
- Cabinet approval of the PES mechanism.
- Implementation of institutional arrangements to operationalize the PES.
- Formal arrangements with the defined administrator of the PES.
- Initial selection of farmers for contract award (including criteria for selection, assessment of eligibility of list of farmers; development of draft contracts and negotiation).

- Development of the PES monitoring framework that guides the farmer incentives programme.
- Sensitization of KMA residents to the importance of IWRM and the PES and the benefits to be gained from a reliable water supply.

109. **Several of the project's activities were designed to address the environmental risks and hazards in the watersheds and their impact on lives and livelihoods – by strengthening the ecosystem integrity**. To complement these, the project's activities also included enhanced capacity for monitoring of ecosystems health, through equipment installed; technical capacity built for assessments (hydromet modelling; CSM assessments; water flow and sedimentation; types and scales of different data sets as exemplified by the requirements for the hydrology assessment and PES design consultancy; KAPB surveys) to integrate via a monitoring framework and system. The data collected are expected to feed into a GIS-DSS to allow for routine and specialized queries to support watershed decision making.

E.2. Risks to Sustainability

110. **Given the absence of a clearly articulated, agreed upon and financed sustainability plan, the TE concludes that there are significant risks to the continuation of Y-H Project outcomes and benefits beyond the LOP.** Table 25 presents TE analysis of risks to Y-H Project sustainability. Of the 18 risks identified, 16 are rated as "high" and the remaining two as "medium", suggesting that the risks to sustainability are high and seriousness of purpose is required for successful transition. They point to the need for concrete plans to be put in place to ensure project achievements are continued, replicated and upscaled as part of a broad and long-term programme for watershed management in the two WMUs. Positive contributions to this long-term programme include EA and TIA ownership and commitment to continue some project actions (e.g., such as efforts detailed in paragraph 99).

Table 25: Risks to Continuation of Results and Benefits Beyond LOP

Risk Types	Risk	Probability	Impact	Risk Rating	• Risk Response
Technical	Data sharing discontinued or not occurring as frequently as required to support IWRM decision-making	Medium	High	**High**	• New agreement amongst all the watershed agencies that includes data sharing responsibilities. • Strong coordination to ensure data provision in specified timeframe and formats.

Risk Types	Risk	Probability	Impact	Risk Rating	• Risk Response
	Decision-support function not adequately utilized	High	High	**High**	• Sufficiently build capacity of a core group of TIA practitioners to utilize the GIS-DSS for IWRM decision-making. • Establish a working group to use the GIS-DSS to make queries that inform key IWRM decisions.
	Inadequacy of data sharing protocols	High	High	**High**	• Establish data sharing protocols and seek consensus from TIAs. • Incorporate requirements for data sharing in M&E framework and plan.
	Absence of a functioning WMU monitoring framework to track progress and assess benefits of interventions	Low	High	**Medium**	• Develop a participatory M&E Framework and plan that defines the data requirements for monitoring, including type and timing of data to be collected and analyzed.
	Inadequate capacity to undertake monitoring, reporting and verification (MRV) for payment of incentives to farmers	Low	High	**Medium**	• Clearly define the elements of the MRV and determine the capacity requirements to implement
Financial	Competing opportunities, e.g., for farmers to earn income	Medium	High	**High**	• Accelerate contracting of farmers by implementation of PES scheme.
Financial	Country-wide economic/fiscal constraints in light of COVID-19 or other similar phenomena	High	Medium	**High**	• Seek donor support to implement the longer term, sustainability plan for IWRM • Accelerate PES implementation
Financial	Appropriate framework for implementation of payment/incentive scheme for Y-H not agreed upon	Medium	High	**High**	• Obtain agreement of key stakeholders on implementation framework for the PES
Financial	Lack of/Insufficient funds to transfer/ transition late momentum provided by Y-H Project into an integrated sustainable environmental and financial solution for the WMUs	High	High	**High**	• Define a short-term bridging plan to transition the Y-H Project and implement immediate actions to catalyze longer term implementation. • Seek support of the GOJ, through the MOFPS, for a bridging project to transition into the longer term sustainability plan. • Lobby GEF/IDB and/or other donor agencies for additional support to

Risk Types	Risk	Probability	Impact	Risk Rating	• Risk Response
					implement the longer term, sustainability plan.
Socio-political	Cabinet does not prioritize the PES scheme	High	High	**High**	• Identify a ministerial champion to move through to approval. • Commence high level dialogue with the MOFPS
Socio-political	Longstanding/unresolved land tenure issues impacting further work in the WMUs, particularly as it relates to implementation of payment/incentive scheme(s)	Medium	High	**High**	• Work with the MEGJC (NLA and other agencies) to regularize land tenure
Socio-political	Inadequate buy-in from: • Political directorate • KMA residents	Medium High	High High	**High** **High**	• Continue to sensitize political directorate on work completed and its importance • Identify champion to drive implementation • Continue to rollout communications campaign targeting the KMA
Institutional	Resource (human and financial) constraints within partner entities that affect commitments made/prevent commitments being made	Low	High	**Medium**	• Lobby the MOFPS to increase budgetary allocation to undertake IWRM activities. • As a priority include Y-H activities in TIA annual and corporate plans. • Assign key staff to retain institutional capacity for continuation of project results
Institutional	Weakened interagency collaboration Inadequate buy-in from TIAs	Medium	High	**High**	• Facilitate cross-agency coordination through the continuation of Y-H Project governance mechanisms (PSC, TWG, PEU) • Establish new interagency agreement (e.g., MOU, PA) with all relevant watershed agencies • Implement the long-term sustainability plan, identifying opportunities for join decision making and activity implementation • Develop and implement a 10-year Y-H IWRM plan • Create a forum for consistent dialogue among the TIAs
Environmental	Natural and man-made disasters/hazards – e.g., enhanced	High	High	**High**	• Develop disaster response plan with clearly defined roles and responsibilities for key stakeholders

Risk Types	Risk	Probability	Impact	Risk Rating	• Risk Response
	droughts, hurricanes, heavy rainfall events, forest fires - that destroy the work done (e.g., trees planted, hydromet equipment installed)				• Expand on fire prevention and management training for first responders (farmers, general community residents)
Environmental	Pressures and threats to forest (encroachment, deforestation, pests and diseases, use of chemicals	Medium	High	**High**	• Conduct enforcement activities to reduce the threats of deforestation and encroachment. • Conduct research to develop options for controlling to pests and diseases, including reduction in the use of chemicals.
Socio-political Institutional Financial	Adoption of SLM practices reduced or discontinued (on account of factors such as age, gender, cost of innovations, farmer apathy, absence of continued support from RADA or other entities, insufficient incentives for adoption)	Medium	High	**High**	• Implement farmer-to-farmer support programmes • Encourage farmers to continue supporting the local "day-for-day" activity • Complete project activity to provide irrigation outlay to farmers • Financing mechanisms (low interest or climate smart loans) • Hold business forum to engage relevant financial institutions and business service providers to (i) highlight the need for financial services and products, including insurance; (ii) provide information on cost of production and models for return on investment and (iii) identify opportunities for supporting farmers in the watersheds • Provide information to farmers on potential sources of financing

F. Lessons Learned and Good Practices

111. TE analysis of the Y-H Project has revealed several lessons and good practices that are important for projects generally, follow-on initiative(s) for the Yallahs and Hope WMUs and specifically for watershed management. High priority lessons and good practices are highlighted in Table 26 and a more comprehensive listing of lessons is provided in Annex 22.

Table 26: Lessons Learned and Good Practices Arising from the Y-H Project

LESSONS LEARNED	
DESIGN	1. **For design of IWRM projects, particularly those that are complex and testing novel approaches, it is important to balance project complexity and host country's absorptive capacity.** Equally ensure that: i. Project support includes a good mix of local and international expertise that balance technical know-how and local context and underpinnings. ii. Targets are carefully set in design to allow for the country to move beyond the business as usual, but without being overly ambitious, which can lead to underperformance. iii. The remit and capacity of project partners are considered when establishing project targets and early and targeted capacity building (e.g., knowledge exchange programmes) provisioned to address gaps.
	2. A strong participatory process is required for project design that (i) involves key partners in all aspects of design (ii) obtains consensus on final design elements for the project and (iii) leads to agreement on identified stakeholders' roles and responsibilities. This will allow for identification of capacity gaps and needs; building capacity of partners in the different facets of the project; minimizing duplication of efforts; building ownership of project activities and creating commitment to achieving project results.
PRE-IMPLIMPLEMENTATION	**3. A pre-implementation phase/ period that is targeted and maximized is essential for successful delivery of IWRM projects, particularly for multi-year and multi-partner projects.** This phase should include (i) meeting special terms and conditions of the financing agreement; (ii) EA readiness activities for project, including onboarding of full complement of PEU staff; (iii) knowledge transfer from design stage; (iv) planning meetings with stakeholders to finalize activity sequencing, work plans and other critical project elements (v) preparation of project procurement documents for works, services and goods, with input from key stakeholders.
	4. EA, PEU (and project partners) must be aware of the (relevant) terms, conditions and requirements of the project/financing agreement in order to adequately structure and align project plans.
	5. In order to minimize administrative challenges during project implementation, inter and intra agency process flows must be well-established. Preparation for project implementation and readiness are key to strong performance. Internal coordination of EA units that will support the PEU is essential and should be well planned prior to project start-up. This should include definition of all process flows and communication channels in preparatory work.
	6. **Where there is significant time lag between project design and implementation**: • **It is important that all design elements (operational and technical) transition into, and be used to inform, implementation. Project design documentation should be reshared and project partners re-engaged prior to project start-up** to ensure (i) all assumptions still hold true and any identified deviations addressed; (ii) stakeholders are reminded of their commitments and can begin to plan for same (i.e., include in their annual work programmes, based on joint planning with the EA); (iii) gaps (on account of staff turnover or otherwise) are addressed. • **Planned activities, timelines and costs should be reassessed at start-up and measures put in place to address any identified gaps**, with donor approval, while adhering to project logic.
IMPLEMENTATION	7. **The PEU and EA should have a good understanding of the project's intervention logic, as this is a fundamental requirement for ensuring the logical sequencing of project activities to achieve the PDO, especially for an integrated, coordinated project**. The EA and PEU should guide project partners in their understanding of the project's intervention logic and help them to be aware of how their activities contribute to the PDO and performance against the RM.
	8. **Tracking of project performance (e.g., via an "at-a-glance" project performance dashboard) and the use of a control/trigger system will allow oversight units, structures and entities, internal and external to the EA, to quickly determine the state of project execution and identify and implement remedial actions as needed**. The tracking and trigger system should form part of the project's integrated risk and issue management processes that allow for project risks and issues to be addressed in a timely manner.

	9. **M&E is critical for determining project performance and supporting decision making within the project context. Any delays in establishing baselines for project interventions (e.g. farmers' knowledge) can limit the project's ability to establish attribution to outcomes**. M&E capacity gaps should be identified early and addressed and where there is an absence of key baselines prior to interventions, other methods to assess the effectiveness of the interventions should be identified and implemented.
WATERSHED MANAGEMENT	10. **Watershed management cannot be solely projectized but needs to have a long-term programmatic approach given the importance and value of watersheds to the environment and people of Jamaica**. **Sustained action to maintain and improve watersheds and secure ecosystems health requires commitment of all stakeholders and government support for sustained financing that is complementary to any other long-term financing mechanisms established.** • The EA, in conjunction with the PEU, should lead on ensuring project activities, outputs and outcomes form part of this programmatic approach and do not come to an end after project closure. • PES, as a mechanism for sustainable financing for watershed management requires serious ownership (staff time, training etc.) and joint effort by a diverse and coordinated set of stakeholders, working at the legislative, policy, planning, regulatory, implementation and monitoring levels for seamless execution. • Project partners must consider critical elements of land use, land tenure, contracts etc., for which actions can be bureaucratic. Public education and sensitization will also be critical. For continuity, there must be a clear roadmap and plan, with roles and responsibilities of partner agencies well defined, a framework and adequate infrastructure and a robust Secretariat to coordinate and manage the initiative. • Having a high-level champion that understands clearly and can pull the pieces together, and hold entities accountable, is desirable.
	11. The Y-H Project experience in its attempt to establish sustainable financing mechanism for IWRM using the PES, underscores the need for continued investment in sustainable financing mechanisms that create incentives for the range of stakeholders.
GOOD PRACTICES	
PROJECT MANAGEMENT	1. A multi-agency project is reflective of true partnership, which needs to be identified in the structures and processes utilized. This approach requires a shift from top-down to more inclusive, participatory engagement of key partners, built on trust. MOUs/PAs serve as a visible commitment by stakeholders but for execution, use of contracts is more effective and allows for flexibility in the use of partner established processes for execution.
	2. Direct alignment of project activities with agencies' mandate builds ownership and commitment and increases the likelihood for smooth implementation. Mainstreaming of project activities in implementing partners' work plans results in greater levels of buy-in and support for project activities, including deployment of personnel and resources.
	3. Project flexibility to undertake budget transfers that allow for savings in one area to be applied to enhance or support other areas that are underfunded.
	4. The use of structures such as the PSC and TWG to provide oversight, technical support and coordination of key implementing agencies to the project.
	5. Utilization of partner strengths in project design and implementation. E.g., for RADA, the following strengths were leveraged in support of the project: Relationship with the farmers; Technical capacity built in land husbandry and FFS extension delivery; The internal capacity of the RADA Project's units; Existing relationships with suppliers (e.g. tree crop nurseries).
	6. Obtaining commitment letters from partners during design is useful for establishing and providing a basis for reengagement once the project is approved.

WATERSHED MANAGEMENT	7. A multi-stakeholder approach to watershed management allows for access to partners' capacity for more effective activity implementation. It also provides opportunities for joint planning, implementation, data and information sharing and leveraging limited resources.
	8. Access to partners' internal resources (tools, personnel) enhances project delivery and can result in time and cost savings.
	9. Data and information sharing supports robust decision making, helps to advance activity implementation, and ultimately builds trust.
	10. Flexibility in activity scheduling to meet participants' needs allow for greater participation (e.g., scheduling sessions to accommodate competing activities).
	11. Learner-centred practical application methodologies are essential to knowledge transfer and behaviour change for IWRM.
	12. An integrated approach to watershed management that incorporates environmental, social, institutional and financial elements can over time secure the desired environmental benefits.
	13. The use of farmer-to-farmer assistance ("Day-for-Day" or "Field Days") facilitates adoption of innovations by individual farmers and ensures accuracy in their replication of innovations.
	14. Joint/Combined field visits by implementing agencies and a mix of group and one on one interaction with community persons during those visits. These helped to build trust and improved working relationships.
	15. Use of community persons to conduct surveys/collect data. This was an especially useful measure in response to restrictions linked to the COVID-19 pandemic.

IV.Key Findings and Recommendations

A. Summary of Major Findings

Relevance and Coherence

1. The Y-H Project aligned with Vision 2030 Jamaica- National Development Plan and the two MTF documents that spanned the LOP. The Y-H Project was also well-aligned to its EA and key TIAs' policies, plans and programs. The project is consistent with the GEF Biodiversity, Land Degradation and Sustainable Forest Management REDD-Plus objectives and also well-aligned to the IDB's plans and its Country Strategy for Jamaica.

2. The Y-H Project intervention strategy was found to be logical with a mix of strategies that worked at multiple levels to address several drivers of watershed degradation in a focused program. The project strategy was found to be sound and coherent, with a clear path to meet its PDO. In examining the vertical logic expressed in the relationships among activities, outputs, outcomes and the desired impact (across the three intervention areas) most of the planned activities were found to be adequate to produce the desired outcomes.

3. The project was designed with a multi-modal implementation framework that sought to utilize and strengthen existing capacities, capabilities and relationships among watershed agencies while securing expertise not readily available within the identified stakeholder institutions and groups. Although stakeholders participated in design, there was room for greater engagement throughout the design process that could have served a dual role of securing buy-in and ownership from the partners while also building their capacity and readiness for implementation.

4. The design phase produced a set of at least twelve important documents, that along with the FA (2014) was the basis for implementation of the Y-H Project. Timely synchronization of approaches and logical sequencing of activities were critical to provide for enhancement of IWRM practices that support achievement of the PDO.

Effectiveness

5. At end of project, the Y-H Project achieved an average of 28% of its impact level, 62% of its outcome level, and 97% of its output level results projected in its RF. The Y-H Project did not achieve the targets set for its two impact level results measured by impact level indicators

I1.1 - Sedimentation in waterways and I2.1 - Tons of carbon sequestered as 56% and 0% of the targets were achieved respectively.

6. The Y-H Project was successful in achieving 62% of its outcome level indicators, having achieved 100% of the targets for both Outcome 1 indicators, 50% of the Outcome 3 indicator target and none of the Outcome 2 indicator targets.
7. At EOP, 97% of the expected output level results were achieved, as the Y-H Project met or exceeded most of the planned outputs under its three project components. The quality of several Y-H Project RF outputs was affected by technical and administrative implementation challenges and gaps caused by poor sequencing, inadequate utilisation of project design guidance, gaps in consultants' TORs and inconsistent quality of consultants' outputs.

Efficiency

8. Factors that contributed to the success of the Y-H Project and the extent to which the PDO was achieved mirrored the principles of integrated watershed management: A reasonably participatory and rigorous evidence-based design; sound host government commitment; effective coordination of multiple IWRM partner agencies; a well-defined and structured governance framework; targeted geographic area and stakeholder participation; iterative planning process, with adaptive actions; alignment and complementarity with partners' mandates, programmes and plans; and multiple benefits from project interventions.

9. Y-H Project challenges included: insufficient utilisation of the design guidelines in mobilization; inadequate technical capacity around PES implementation; administrative and procurement bottlenecks; limited state of readiness for implementation; gaps in PEU and partner agencies' capacity and constant staff turnover; quality issues associated with project results; inadequate focus on the enabling environment; absence of a trigger mechanism for urgency of action on poor project performance; limited change control and absence of a structured process to identify workarounds that address project constraints and minimize implementation delays. In addition, the multiple transitions of TTLs and supporting OAs over the LOP impacted smooth implementation of the project.

10. The EA/PEU's fiduciary management for the Y-H Project was strong and reflected full compliance to the FA (2014) while adhering to the procurement protocols of both the GOJ and the IDB, but Inadequate financial and procurement planning, in addition to the structural inefficiencies in the IDB and GOJ procurement processes, especially the layered approval process, necessitated use of the supplemental budget mechanism at the MOFPS to adjust the initial budget proposal submitted for fiscal space.

11. The Y-H Project was cost-effective as overall outputs were achieved at a reasonable cost while the design targeted areas with high environmental benefit and low opportunity cost. When compared to other similar projects with an integrated, multi-faceted design, the project was comparable in cost and planned outcomes, with high environmental benefits and low opportunity cost. The Project was implemented at 87% (US$3,392,543.41) of the planned cost ($3,909,441) as at November 2020. At EOP, GOJ co-financing requirements were met and exceeded by US$812,249.06, despite delays in TIA delivery of annual co-financing reports, and included complementary contributions from other projects in the project area.

12. Despite a competitive procurement process with least cost, average CPI of 0.26 and SPI of 0.61 are indicating that significant delays occurred during implementation. The CV indicate that actual project implementation cost exceeded the value created annually; with US$6.787 million associated with implementation delays. The SPI, CPI, CV and SV are indicative of project inefficiencies associated with implementation delays.

13. The Y-H Project's *ex-post* CBA found that the project returned a negative net benefit, costing an estimated US$14.285 million, while also creating US$6.787 million in implementation delays along with an additional US$1.520 million in unused fiscal space, unspent funds US$0.550 million and a disbursement variance of US$1.367 million totalling US$24.510 million in cost, while generating approximately US$22.316 million in benefits at the end of implementation.

14. Procurements of goods, services and works under the Y-H Project were generally compliant with GOJ and IDB procurement policies and guidelines, however, procurement-related issues and challenges were found to be one of the major causes of implementation delays and required several levels of intervention over the LOP. A significant shortcoming in the project's procurement management and execution was the delayed adherence with the requirement in the FA (2014), for the FD and RADA to be engaged under single source selection for the implementation of Component 3 activities.

15. The success of Y-H Project risk management actions varied across the LOP, with relatively fair performance at routine risk assessment, but deficiencies as it relates to the timeliness and adequacy of risk mitigation actions. Throughout much of the LOP, risk response actions were concentrated primarily on implementation risks and not those that could impact sustainability, bringing into question the efficacy of the project's overall risk management efforts.

16. At start-up the Y-H Project had an adequate M&E plan that was referenced in the drafted POM (2013), the FA (2014), and the POD (2014), which outlined the approach and methodologies to be used by the EA and coordinated by the PEU with the TIAs, to monitor results and track and report on the progress made towards achieving the PDO. The budget included in the M&E plan (2014) was found to be inadequate to execute the M&E requirements of the project.

17. M&E implementation for the Y-H Project had several deficiencies, linked to its complex implementation arrangements and a multi-layered reporting system that did not sufficiently build off the M&E plan provided at entry. M&E implementation did not benefit from an updated M&E plan that provided a shared framework for output, outcome and impact level data collection, analysis and reporting. Gaps in partner technical and infrastructural capacity also limited M&E implementation. Partner and project reporting on performance results was done in the absence of a shared framework that not only outlined the requirement for output but also the project's outcome level indicators, informed by updated data collection methodologies, agreed on by the PEU, the TWG and the PSC. There was no evidence of targeted capacity building to support the EA, PEU and TIAs in the execution of M&E implementation requirements.

18. Evidence of a structured, iterative process of robust decision-making in the face of various risks and uncertainty and ongoing opportunities for reflection and adjustments for the Y-H project is limited. Notwithstanding, the project has been responsive to challenges and constraints for which adaptive actions are evident. Change control has been limited with no evidence of a systematic approach to managing all project changes.

19. *Ad hoc* gender considerations were identified in the Y-H Project but a structured approach to gender mainstreaming was absent. Strong project communications and visibility were evident and maintained throughout the Y-H Project LOP. However, impact of the implementation of the Communications Strategy has not been assessed despite the extensive set of activities implemented throughout the LOP.

20. The IDB's supervision of the Y-H Project was evident in its efforts to conduct annual technical review Mission pre mid-term, conduct multiple virtual and face-to-face monthly and ongoing meetings with the PEU and attend initial PSC meetings in an observer capacity. However, the multiple transitions of TTLs and supporting OAs over the LOP impacted smooth implementation of the project. The IDB provided backstopping for specific activities, both in terms of technical capacity and financing. The IDB's PMR for monitoring of project progress

and status was not communicated to the EA/PEU, although it contained critical information for actioning by the EA.

Impact

21. The analysis of Y-H project impact was limited by the absence of key datasets defined in the project's M&E plan at start up. Using proxy analyses the TE found that the Y-H project used its extension programme to change farmers agricultural practices and also reported a reduction in levels of sedimentation in priority watershed locations. The Project also made attributable contribution to improved coordination across watershed management partner agencies, with greater science and data-driven decision-making.

Sustainability

22. Government ownership and commitment to the PDO was implicit in the project design and the implementation strategy. This commitment involved continuity of project benefits beyond the LOP, as impacts were expected to be fully derived in ten years. At the time of this TE, the PEU had drafted a sustainability plan, that reflects some activities that will transition from the project to longer term programmatic actions. The Plan, however, lacked cohesion and a defined logic (similar to the intervention logic of the project) as the basis for the transitioned Y-H project that defines commitments to sustain action and scale up results. Given the absence of a clearly articulated, agreed upon and financed sustainability plan, the TE concludes that there are significant risks to the continuation of Y-H Project outcomes and benefits beyond LOP, most of which are rated high.

B. Project Rating

B.1. Project Performance with respect to GEF Evaluation Parameters (Summary)

Parameter	Grade [56]	Justification
4. Outcome	**MU**	• The project had a strong design that was well-aligned with GEF and technical agencies' mandates and plans. However, there was partial achievement of the outcome level results. The project was not cost-effective and was significantly delayed, and these affected achievement of project results.
iv. Relevance	S	• Aligned with GEF Biodiversity, Land Degradation and Sustainable Forest Management REDD Plus objectives.

[56] *S – Satisfactory; MS – Moderately Satisfactory; MU – Moderately Unsatisfactory; U – Unsatisfactory; HU – Highly Unsatisfactory*

Parameter	Grade [56]	Justification
		• Aligns with the Vision 2030- Jamaica- National Development Plan and two MTF documents, technical implementing partners' policies, mandates, corporate and operational plans and programmes • Was designed with a mix of activities focused on policy, institutional and practice that produced outputs, all expecting to contribute to one or more of the project's three main outcomes. • Strategy was found to be sound and coherent, with a clear path to meet its PDO. Most of the planned activities were found to be adequate to produce the desired outcomes.
v. Effectiveness	MS	• The Y-H Project was successful in achieving 60% of its outcome level indicators, having achieved 100% of the targets for both Outcome 1 indicators, 100% of the Outcome 3 indicator target and none of the Outcome 2 indicator targets. • The target for both Outcome 1 indicators - O1.1: Watersheds covered by development orders that include land cover and soil management (SLM) and O1.2: Agencies updating data in DSS (Decisions Support System) according to agreed protocol were met. No results were achieved for Outcome 2: Functioning pilot PES system. Both associated indicators O2.1: Area under contract and O2.2: Contracts signed could not be measured at EOP. For Outcome 3, 1296 hectares were reforested in the WMUs.
vi. Efficiency	U	• The Y-H Project implementation was not cost-effective as overall outputs and outcomes were not fully achieved. In addition, the total economic cost of implementation, exceeded the planned cost, while achieving less than desired planned output and outcomes. Those outcomes and outputs that were completed, were achieved at reasonable direct cost but suffered from high unplanned cost associated with implementation delays. • The project was implemented with 87% (US$3,392,543) of the GEF budget ($3,909,441) spent. • The Y-H Project's *ex-post* Cost Benefit Analysis found that the project returned a negative net benefit. • Despite a competitive procurement process with least cost, average Cost Performance Index (CPI) of 0.26 and Schedule Performance Index (SPI) of 0.61 are indicating that significant delays occurred during implementation. The cost variance (CV) indicate that actual project implementation cost exceeded the value created annually; with US$6.787 million associated with implementation delays. The SPI, CPI, CV and SV are indicative of project inefficiencies associated with implementation delays.
5. Sustainability	**MU**	• Absence of a clearly articulated, agreed upon and financed sustainability plan. • Significant risks to continuation of project benefits and outcomes remain unaddressed. • Of 18 risks to sustainability that have been identified, 16 are "High "and 2 are "Medium", giving an overall risk rating of "High" for sustainability. These risks have been categorized as follows: financial, socio-political, institutional, environmental and technical.

Parameter	Grade [56]	Justification
6. Quality of Project M&E	**U**	• Strong design but weak implementation reflective of capacity gaps (systems and technical knowledge) and poor sequencing across both EA and the GEF Administrator (IDB).
iii. Quality of M&E Design	S	• The Y-H Project had a sound RF at design and adequate M&E plan that was referenced in the drafted POM (2013), the FA (2014), and the POD (2014), which outlined the approach and methodologies to be used by the EA and coordinated by the PEU with the TIAs, to monitor results and track and report on the progress made towards achieving the PDO. The budget included in the M&E plan (2014) was found to be inadequate to execute the M&E requirements of the project.
iv. Quality of M&E Implementation	HU	• Absence of an updated M&E plan for the project, following design and start-up, that would align with activity or partner M&E plans. • Absence of a defined data collection strategy that detailed the collection and tracking of data for all levels (output, outcome and impact) of the RF, across all partners. • Inadequate documentation of multi-year changes to the RF (and indicator targets) from design to entry and during implementation. • Absence of a "PEU-owned" performance indicator tracking system that monitored real-time status of all project indicators (referencing supporting documentation for validation). • Baselines conducted well after the start of associated activities – for example, KAPB assessment – that limited the efficacy to report on the changes effected by the project for key components, e.g., farmer adoption and change in attitudes and behaviours. • Limited M&E capacity building provided to PEU staff and partners – to secure the training and equipment needed to support monitoring and reporting at all levels of the RF and after project closure. • An output-focused reporting to the oversight body with limited to no assessment of progress at the outcome and impact levels. • Insufficient budget to meet the M&E requirements – as some supporting consultancies exceeded the projected amounts and training and equipment needed for data collection were not budgeted for or addressed.
6. Quality of Implementation (GEF Administrator)	**M S**	• Annual technical review missions were held pre-mid-term but there was none post mid-term. • There was good communication with the PEU, with regular meetings held. • Project status and its implications were communicated to GOJ during annual portfolio reviews throughout the LOP. • There were multiple transitions in TTLs and OAs over the LOP, resulting in gaps in communication • Changes in IDB archival system resulted in gaps in institutional memory • There were weak linkages made with design outputs. • The IDB supported the PEU to identify expertise for consultancies. • The PMR, IDB's annual monitoring tool, provided significant information on project status for tracking implementation progress.

Parameter	Grade [56]	Justification
		• The IDB's attempts to improve project focus on outcomes and impacts were not well articulated and did not result in improvements in RF monitoring.
7. Quality of Execution (GOJ/EA)	**M S**	• Sound host government commitment for recurrent watershed activities; effective coordination of multiple IWRM partner agencies; a well-defined and structured governance framework; targeted geographic area and stakeholder participation. • The EA/PEU's fiduciary management was strong and reflected full compliance to the FA (2014) while adhering to the procurement protocols of both the GOJ and the IDB. • GOJ overall co-financing requirements were met and exceeded, but annual reporting was weak. • Inadequate translation of project design intent and FA (2014) requirements into implementation. • Fair communication and visibility, but engagement of some key stakeholders not evident. • Inconsistency in backstopping and limitations in coordination of support provided to the PEU by the EA. • Limited tracking of project status to ensure timely adaptive management and corrective actions taken.

C. Recommendations

The TE provides the following recommendations to the PEU, the Host Government, the GEF and IDB that utilise the findings to stimulate future corrective actions. Recommendations either reduce the risks[57] to intervention impact and sustainability or inform improvements in future scale-up and replication. The recommendations are grouped in short and medium to long-term timeframes, with required actions needed (i) before the project closes and (ii) post closure. In addition, Annex 23 provides general recommendations to the GOJ and IDB to improve implementation efficiency of future donor-funded projects.

(C) Closeout Actions

1. **PEU - Develop a closeout plan, for handover to the EA, that defines critical "next steps" for incomplete activities[58] in order to secure the project's investments**. Develop the closeout plan (including a risk analysis) in collaboration with key partners and use the Y-H Project momentum to complete the remaining steps.

[57] Key risk categories included in the TE's analysis of risk to sustainability: Technical, Financial, Economic, Institutional, Governance, Social, and Environmental.

[58] For example the complete testing of the GIS-DSS system and establishment of protocols for data sharing between the key agencies, PES buy-in and Cabinet approval, Watershed Policy Cabinet approval, presentation and validation of the WAMM to wider watershed stakeholders, CSM, and Ecological Assessment.

2. **PEU - Establish a shared archival system that captures documents, other materials and project management records.** Use the system in transitioning to a programme, design of other watershed initiatives, post-project auditing in collaboration with NEPA projects and knowledge management standards. Make technical lessons learned available to partners and other watershed stakeholders.

(D) Post Closure

3. **NEPA - Lead a multiagency response to develop and implement a strategy to move the PES output from design to implementation.** Given the critical need for sustainable financing for watershed management and having selected the PES as a mechanism for long-term financing, including the design work during LOP, the following is the recommended roadmap to move this mechanism to full implementation:
    g) Obtain full stakeholder agreement and ownership on the drafted PES design documents.
    h) Prepare, with participation of PES stakeholders, a Specific, Measurable, Achievable, Realistic and Timebound (SMART) action plan defining actions with assigned roles and responsibilities to move the existing PES outputs through to implementation, including obtaining required government approvals.
    i) Re-engage political directorate (e.g., Water, Environment and Agriculture Ministers) to secure a champion for the PES.
    j) Mobilise, with urgency, follow-on resources to secure PES implementation in the WMUs, exploring opportunities with donors, private sector, and lobbying government for committed budgetary allocation. Use existing information from Y-H Project implementation expenditures to develop a budget proposal that supports an annual work programme (inclusive of the pilot phase defined in the PES design documents (Deliverable #16 – Sustainable Financing Plan).
    k) Implement the pilot to test and generate lessons learned that can be used for expanded PES implementation.
    l) Implement the full PES scheme utilising lessons learned from the pilot.

4. **NEPA** - Transition the Y-H Project to a long-term programmatic intervention that supports the sustainable financing mechanism (PES) and other IWRM activities that may be prioritized later. To facilitate this broader intervention:

a. *Develop a long-term[59] Y-H Integrated Watershed Management Plan* for the WMUs in collaboration with the relevant partners agencies. The plan should align with and build on the Y-H Project sustainability plan and the actions to advance the PES and other prioritised activities; while expanding to include new elements such as climate change, disaster risk reduction and Sustainable Development Goals (SDGs) – that can also attract new and additional financial resources.
b. *Support the watershed plan with a strategic plan* integrating the WAMM M&E framework elements and the GIS – DSS system to inform decision-making.

5. **NEPA / PIOJ -** Develop a concept note and plan (maximum two-years) to secure funding for a IWRM bridge project that will facilitate transition from the Y-H Project to a long-term programme. The bridge activity will provide a frame for implementing immediate next steps post-project (e.g. building high level capacity for the PES), while establishing the structures for the longer-term sustainability plan. The following are key actions to move forward:
    a. Develop a concept proposal that packages some key activities that shares a vision that sustains continuity to Y-H Project outcomes in the WMUs based on the PDO and other national IWRM priorities.
    b. Use this package to sell the concept to the target group, ensure the projected impacts of the initiative are well articulated, financially. Utilise key project documents such as the information provided from PES design.
    c. Lobby MOFPS and identified champion Minister (s) to secure government priority and budgetary allocation for long term management of WMUs, starting with a commitment to the strategic plan for the Y-H Programme.
    d. Mobilise a small project implementation team (2 persons) to coordinate the planned activities, for example:
        i. High level capacity for the PES through sensitization sessions and additional technical exchanges involving Ministers, select Permanent Secretaries, and other agencies like PIOJ, and the GEF FP among others,
        ii. Creating linkages with other IWRM or sustainable financing projects,
        iii. Develop other models (diversified streams) for sustainable financing for IWRM.
    e. Establish the structures for longer-term IWRM programme sustainability in the WMUs (e.g., governance arrangements, M&E system and plan, alignment with Vision 2030 MTF, integration in key agencies' corporate and operational plans).

[59] 10-year

6. **NEPA / GOJ** Utilise the lessons learned from the Y-H Project and other IWRM initiatives to define an updated framework for watershed governance, designed to move from opportunistic projectized initiatives to a cohesive long-term cross agency approach to addressing issues in the WMUs, informed by data on economic and social values. The following are essential actions:
    a. Agree on a multi-tiered governance arrangement that should include:
        i. A high-level Program Management Committee involving strategic level stakeholders (consider the NIWRMC as it involves Heads of Agencies of relevant MDAs)
        ii. A second tier Technical Advisory Body (TAB) for all matters technical.
        iii. A projects unit that is housed within a lead implementing agency for example NEPA.
        iv. *Ad hoc* special committees to address focused thematic areas, as needed.
    b. Drive the Policy Dialogue with Cabinet Office and the Public Sector Modernisation Unit (public sector reform) to support integrated watershed management utilizing a joined-up government approach that epitomizes true coordination among watershed agencies.
    c. Sign-off and incorporate coordinated implementation of the WAMM as a mechanism that puts the policy directives and lessons learned into practice.

7. **GOJ - Build a cross-agency cadre of project management specialists situated within core GOJ agencies available to support mobilization and implementation requirements of donor funded projects.** Equip the specialists to cover critical areas such as project performance monitoring and evaluation, and government and donor procurement planning and management.

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VI.Annexes

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A. Annex 1: Terms of Reference (abbreviated)

2.0 OBJECTIVE AND SCOPE OF THE REVIEW

2.1 The Terminal Evaluation (TE) of the Project **Integrated Management of the Yallahs and Hope River Watershed Management Areas**" is being undertaken at the end of project implementation to analyse the extent to which the project achieved the objectives stipulated under the three project components, what problems or challenges were encountered, and what corrective actions were required. The TE is expected to assess operational aspects, such as project management and implementation of project activities towards achieving the objectives. The evaluation will also assess project performance to date (in terms of relevance, effectiveness and efficiency), and determine the likelihood of the project achieving its intended outcomes and impacts, and the implementation of planned project activities and planned outputs against actual results and the reason for variances if any. The lessons learned and best practices from the implementation of the project will also be explored.

2.2 This evaluation will determine the following:

- Whether the project achieved its objectives and whether outcomes were relevant, efficient, effective, sustainable, and what are the early signs of impact. If there is a variance in actual and target, the reasons for such difference.
- The lessons learned and best practices from the implementation of the project and in relation to sustainable land management practices; conservation of biodiversity and sustainable use of ecosystem services.

2.3 The scope of the evaluation includes the assessment of project results in keeping with the project agreement documents and the project results matrix.

In addition the following criteria should be observed:

- Relevance: The Consultant will assess the degree to which the project takes into account the local context and problems. The evaluation will also review the extent to which the project design was logical and coherent, and it will assess the link between activities and expected results, and between results and objectives to be achieved.
- Effectiveness: The evaluation will assess the extent to which the project's objectives have been achieved, compared to the overall project purpose. In evaluating effectiveness it is useful to consider: 1) if the planning activities were consistent with the overall objectives and project purpose; 2) the analysis of principal factors influencing the achievement or nonachievement of the objectives.
- Efficiency: This area measures how economically resources and inputs (such as funds, expertise and time) are converted to results and the cost effectiveness of the efforts, whether the results achieved are worth the monies spent. A project is efficient when it uses resources appropriately and economically to produce the desired outputs.
- Sustainability: The evaluation will assess the project's capacity to produce and to reproduce benefits over time. In evaluating the project's sustainability it is useful to consider to what extent intervention benefits may continue even after the project is concluded and the principal factors influencing the achievement or non-achievement of the project's sustainability.
- Review of project outcomes: The evaluation will assess any credible evidence of impact effectively achieved or potentially achieved by the project in the context of reference.
- Lessons Learnt and best practices: In addition, the evaluation process will seek to identify and document lessons learnt during project implementation. The compilation of the comprehensive lessons learnt should cover the entire period of the project. Data gathering may take the format of interviews, administration of questionnaires or surveys and desk review.

The evaluation will focus on the following sets of **key questions**, based on the project's results framework and current implementation issues, which may be expanded by the consultants as deemed appropriate:

Relevance:

- Are the project outputs relevant to the purpose or objectives of the project intervention?
- Does the project address needs of policy makers, state and non-state practitioners active in the field of integrated water resource management (IWRM)?
- Does the project respond to key needs of primary and secondary beneficiaries?
- Do the needs of the beneficiaries differ according to gender?
- Were the project indicators relevant to the designed outputs?

- Were the intended results (outputs and outcomes) adequately defined and stated in measurable terms, and are the results verifiable?
- The assessment of relevance should also consider changes in context and revision of assumptions.

Effectiveness

- To what extent have the expected project objectives and outputs been achieved?
- Are there any success factors for the achievement or reasons for nonachievement of project outputs?
- What were the major challenges, opportunities and obstacles encountered by the project generally?
- To what extent has the project achieved its intended and unintended objectives and results? What are the positive and negative, long term effects of the project on direct beneficiaries?
- Are there unplanned benefits from the project implementation?
- What, if any, progress has been made towards the achievement of the agreed project outcomes?
- Have the interventions resulted in measurable changes within the targeted communities?
- Has there been adoption and replication of interventions by the watershed communities?

Efficiency

- Was project funding spent as planned? Were all activities addressed with the respective budget?
- Did the project M&E systems and practices allow for in-time corrective actions and tracking of the progress towards the expected results (outputs)?
- Were project risks identified during project development? Were other risks identified during project implementation and were mitigation measures implemented?
- Were management arrangements appropriate and to what extent did they support the efficiency of the project? What financial management barriers or challenges were experienced during the project period?
- What are the key challenges to project implementation? Is technical backstopping provided by the IDB to the PEU effective? Was the Project Executing Unit (PEU) working efficiently and effectively? Were AOPs successfully implemented?
- Are the benefits identified in the evaluation worth the cost?

Sustainability

- Is there a sustainability component for the sites that received funding under the project?
- Are the beneficiaries committed to continuing working towards project objectives after the project ends?
- Are services developed under the project likely to continue, be scaled up or replicated after the project funding ceases?
- Was there successful creation of economic or financial incentive schemes to support biodiversity and integrated water resource management?

Evidence of Impact or potential impact

- Is there evidence of project impact? If not, does the project have the future potential in impacting the relevant sector(s)? In what ways? How should it be measured?

Gender responsiveness

- Did the project identify gender issues in the design or implementation phase of the project? How did the project address these issues?
- Could the project have been more gender- sensitive? If so, in what ways?
- Are the project benefits distributed between men and women equally? If not, assess the reasons for this.

Partnerships

- Were coordination mechanisms among the relevant partners successfully established?
- What were the opportunities, achievements and challenges of the partnerships?

Lessons Learnt

- What were the main lessons learnt and best practices that impacted the execution of the project?

- What were the lessons learnt from the methodologies and mechanisms for sustainable land management practices; conservation of biodiversity and sustainable use of ecosystem services.
- Were there good practices in project

Key Evaluation Principles

In attempting to evaluate any outcomes and impacts that the project may have achieved, evaluators should remember that the project's performance should be assessed by considering the difference between the answers to two simple questions "**what happened?**" and **what would have happened anyway**. These questions imply that there should be consideration given to the baseline conditions and trends in relation to the intended project outcomes and impacts. In addition, it implies that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project.

Sometimes, adequate information on baseline conditions and trends is lacking. In such cases, this should be clearly highlighted by the evaluator, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

Document Review

In carrying out the final evaluation, the consultant is expected to review all related project documents including - GEF's full document of request for CEO endorsement and its Program Framework Document; GEF's Terminal Evaluation Guidelines and reporting requirements, the project's results matrix; the Agreement executed between the IDB and the Executing Agency; the mid-term evaluation; the GEF's tracking tools updated at mid-term; the annual project implementation reports (PIRs) submitted to the GEF Secretariat during execution; the financial and technical reports issued by the project partners with the relevant co-financing contributions; Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full Size projects etc., among other relevant document for the successful completion of the final evaluation of the project.

3.0 Main Activities

1. Assessment of project assumptions, objectives and design The evaluation will examine the following:

Project Theory

Assessment of the assumptions and of the theory of change (causal pathways) underpinning the project idea and design, including its coherence, internal and external validity.

Project Objectives and Logical Framework

Analysis of the project Results Framework and variations over time if any, including:

- the links and causal relationships between inputs, activities, outputs, outcomes and impact (specific and development objectives);
- relevance and appropriateness of indicators; x validity of assumptions and risks
- existence of formal approvals to any modifications of the results framework

Project Design

Analysis of the project strategy and structure including:

- approach and methodology;
- time frame and resources;
- institutional set-up;
- management arrangements;
- Identification of Stakeholders and beneficiaries.

2. Project Performance with respect to GEF Evaluation Parameters

A. Attainment of objectives and planned results (progress to date): The assessment of project results seeks to determine the extent to which the project objectives have been achieved and assess whether the project has led to any other positive or negative consequences. While assessing a project's progress towards the intended outcomes / objectives as stated in the project document (PD), the evaluation will also indicate if there were any changes to the outputs and performance indicators in the PD and whether those changes were approved. If the project did not establish a baseline (initial conditions), the evaluator should seek to estimate the baseline condition so that achievements and results can be properly established (or simplifying assumptions used). Outcomes are the likely or achieved short-term and medium-term effects of an intervention's outputs. Examples of outcomes could include but are not restricted to stronger institutional capacities, higher public awareness (when leading to changes of behaviour) and transformed policy frameworks.

B. Assessment of Sustainability of project outcomes:

Sustainability is understood as the probability of continued long-term projectderived outcomes and impacts after the GEF/IDB project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute to or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, e.g. stronger institutional capacities or better-informed decision-making, legal frameworks, socio-economics incentives or public awareness.

Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes. The evaluation should ascertain to what extent follow-up work has been initiated and how project outcomes will be sustained and enhanced over time. In this case, sustainability will be linked to the likelihood of continued use and influence of best practices promoted by the project for sustainable land management practices; conservation of biodiversity and sustainable use of ecosystem services.

Four aspects of sustainability should be addressed: financial, socio-political, institutional frameworks and governance, and environmental. The following questions provide guidance on the assessment of these aspects:

- *Financial resources.* To what extent are the outcomes of the project dependent on continued financial support? What is the likelihood that any required financial resources will be available to sustain the project outcomes/benefits once the GEF/IDB assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and market trends that support the project's objectives)?
- *Socio-political:* To what extent are the outcomes of the project dependent on socio-political factors? What is the likelihood that the level of stakeholder ownership will allow for the project outcomes/benefits to be sustained? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?
- *Institutional frameworks and governance.* To what extent are the outcomes of the project dependent on issues relating to institutional frameworks and governance? What is the likelihood that institutional and technical achievements, legal frameworks, policies and governance structures and processes will allow for, the project outcomes/benefits to be sustained? While responding to these questions consider if the required systems for accountability and transparency and the required technical know-how are in place.
- *Environmental.* Are there any environmental risks that can undermine the future flow of project environmental benefits?

C. Achievement of outputs and activities:

- Delivered outputs: Assessment of the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.
- Assess the soundness and effectiveness of the methodologies used for developing the technical documents and related management options in the participating countries.
- Assess to what extent the designed demonstrations have the weight of scientific authority/credibility, necessary to influence policy and decisionmakers, particularly at the national level and suggest any possible improvements.

D. Catalytic Role and Replication

The Final Evaluation will also describe any catalytic or replication effect of the project. Replication approach, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources).

If no effects are identified, the evaluation will describe the catalytic or replication actions that the project carried out or possible strategies for this purpose.

E. Assessment of Monitoring and Evaluation (M&E) Systems:

- **M&E design.** Does the project have a sound M&E plan to monitor results and track progress towards achieving project objectives? The Final Evaluation will assess whether the project met the minimum requirements for project design of M&E and the application of the Project M&E plan. The evaluation shall include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The time frame for various M&E activities and standards for outputs should have been specified based on results based management principles.
- **M&E plan implementation.** Is an M&E system in place and does it facilitate tracking of results and progress towards projects objectives throughout the project implementation period? Are annual project reports complete, accurate and with welljustified ratings? Is the information provided by the M&E system used to improve project performance and to adapt to changing needs? Does the project have an M&E system in place with proper training for parties responsible for M&E activities to ensure data will continue to be collected and used after project closure?
- **Budgeting and funding for M&E activities.** Were adequate budget provisions for M&E made and are such resources made available in a timely fashion during implementation?
- **Long-term Monitoring.** Is long-term monitoring envisaged as an outcome of the project? If so, comment specifically on the relevance of such monitoring systems to sustaining project outcomes and how the monitoring effort will be sustained.

F. Preparation and Readiness

Are the project's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing institution and counterparts properly considered when the project was designed? Were lessons from other relevant projects properly incorporated in the project design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place?

G. Country ownership

This is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements. Examples of possible evaluative questions include: Was the project design in-line with the national sectoral and development priorities and plans? Are project outcomes contributing to national development priorities and plans? Were the relevant country representatives, from government and civil society, involved in the project? Did the recipient government maintain its financial commitment to the project?

H. Stakeholder participation /public awareness

Has the project involved the relevant stakeholders through information sharing, consultation and by seeking their participation in project's design, implementation, and monitoring and evaluation? For example, did the project implement appropriate outreach and public awareness campaigns? Has the project consulted and made use of the skills, experience and knowledge of the appropriate government entities, community groups, private sector, local governments and academic institutions in the design, implementation and evaluation of project activities? Were perspectives of those that would be affected by decisions, those that could affect the outcomes and those that could contribute information or other resources to the process considered while taking decisions? Specifically, the evaluation will:

- Assess the mechanisms put in place by the project for identification and engagement of stakeholders in each participating country and establish, in consultation with the stakeholders, whether this mechanism was successful, and identify its strengths and weaknesses.

- Assess the degree and effectiveness of collaboration/interactions between the various project partners and institutions during implementation of the project.
- Assess the degree and effectiveness of any various public awareness activities that have been undertaken during implementation of the project.

I. Financial Planning

Has the project had the appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allow for timely flow of funds. Specifically, the evaluation should:

- Assess the strength and utility of financial controls, including reporting, and planning to allow the project management to make informed decisions regarding the budget and allow for a proper and timely flow of funds for the payment of satisfactory project deliverables throughout the project's lifetime.
- Present the major findings from the financial audit if one has been conducted.
- Did promised co-financing materialize? Identify and verify the sources of co- financing as well as leveraged and associated financing.
- Assess whether the project has applied appropriate standards of due diligence in the management of funds and financial audits.
- The evaluation should also include a breakdown of actual expenditures of GEF and co-financing for the project to date.

J. Implementation approach:

This includes an analysis of the project's management framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management. The evaluation will:

- Ascertain to what extent the project implementation mechanisms outlined in the project document have been closely followed. In particular, assess the role of the various committees established and whether the project document was clear and realistic to enable effective and efficient implementation, whether the project was executed according to the plan and how well the management was able to adapt to changes during the life of the project to enable the implementation of the project.
- Evaluate the effectiveness and efficiency and adaptability of project management and the supervision of project activities / project execution arrangements at all levels.
- Assess whether the logical framework was used during implementation as a management tool and whether feedback from M&E activities more broadly was used for adaptive management.

K. IDB Supervision and Backstopping

- Assess the effectiveness of supervision, administrative and financial support provided by IDB. Did they identify problems in a timely fashion and accurately estimate the seriousness? Did they provide quality support and advice to the project, approve modifications in time and restructure the project when needed? Did they provide the right staffing levels, continuity, skill mix and frequency?
- Identify administrative, operational and or technical problems and constraints that influenced the effective implementation of the project.

3. Exit workshop

- Design and facilitate the organization of the exit workshop to present draft findings of the Terminal Evaluation Report
- Attend, facilitate/moderate and minute the outcomes event
- The performance table created in the Mid-Term evaluation previously done should be used as the rubric for evaluation in this the Final evaluation.

4.0 RESPONSIBILITIES OF NEPA

The NEPA through the PEU will be responsible for the following: x Call inception meeting to clarify the Terms of Reference. x Provide documentation available within the Agency to assist consultancy.

- Provide the consultant with a letter of introduction for entities to be engaged.
- Plan the schedule for the evaluation.
- Submit the Consultant's deliverables to the IDB-GEF coordination team for review

- Provide the IDB-GEF coordination comments to the Consultant for incorporation and resolution in the Consultant's finalization of deliverables
- Elevate issues as necessary for resolution.
- Manage the implementation of the consultancy.

NEPA's Logistical Support

NEPA will also provide as available, technical papers and reports, maps and GIS data to support the work to be carried out by the Final Evaluator. The Agency will provide transportation as needed to conduct site visits to demonstration and reforestation sites. Transportation to meeting site will be provided as needed based on availability of Project Vehicle. The incumbent is expected to be in-country for the duration of the consultancy.

Consultant's Responsibilities

The Consultant will manage time and responsibilities to ensure efficient and effective delivery of outputs required under this Terms of Reference.

The Final Evaluator will work according to the schedule provided for execution of the consultancy. The Consultant will work under the coordination and in cooperation with NEPA, through the PEU and in collaboration with external Project partners- RADA, FD, WRA, NWC, Met Service and JCDT.

The Final Evaluator shall liaise with the Project Manager and other project partners in order to execute the scope of work. Working within the framework of the terms of engagement, the Consultant shall:

i. Work closely to network with the PEU as necessary and seek clarification and resolution of issues;
ii. Elevate any issues and request in writing meetings with Director-PPER Division/Manager of Projects Branch and the Project Manager to resolve any issues as soon as they arise;
iii. Coordinate all inputs/outputs of field visits, data collection and analysis, community based meetings and stakeholder workshops;
iv. Ensure proper identification during the implementation of consultancy; and
v. Submit all deliverables on time and within budget.

Approval of deliverables:

Deliverables must be approved and be found satisfactory by the Director of Projects and the IDB/GEF coordination team before payment is made to the consultant.

B. Annex 2: Key TE analysis techniques/approaches

Key TE analysis techniques/approaches

TE Analysis Technique / Approach	***Evaluation Criteria*** *(as per TOR)*	***Rationale | Justification***
Historical Timeline & Situational Analysis	*Relevance* *Effectiveness* *Efficiency* *Sustainability* *Impact*	*The analysis will assess the assumptions made during the preparation stage, particularly objectives and agreed upon indicators, as well as the current context of the implementation.* *To assess the efforts made and the ultimate alignment of the project's strategies and activities with the country needs and the Y-H Project strategic priorities.* ***Conclusions will also be made on the implementation approaches used by the project.*** ***The analysis will also inform conclusions on project preparation*** *and readiness, country ownership, and stakeholder participation /public awareness.*
Assessment/ Review of project assumptions, Project Design, *Project Theory* *Project Objectives and Logical Framework*	*Relevance* *Effectiveness*	*This analysis will make conclusions on whether the project's objectives and outcomes or components are clear and practical. The analysis will also assess the Y-H Project Monitoring and Evaluation (M&E) Systems, including associated data collection strategy and the role of the Technical Implementing Agencies (TIAs) in generating and validating the project results.*
Analysis of Results / Y-H Project Results Framework Review	*Effectiveness* *Sustainability* *Impact*	*This analysis will provide a status on the progress towards planned results, obtained through a review of the performance of project indicators (actual results achieved) against baseline. This will also identify early successes to highlight and opportunities for expansion of these benefits through lessons learned.* *The analysis will also examine if progress so far has led to, or could in the future, catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, and improved governance).*
Cost Effectiveness Analysis	*Efficiency*	*Quantitative indicators, such as the Schedule Performance Index (SPI) & Cost Performance Index (CPI) among others, will be used to objectively establish the efficiency of the project implementation thus far. This analysis will be guided by the Results Matrix, Annual Workplans, Annual Project Monitoring Reports (PMRs), amongst others. If necessary, an analysis of budget adjustments will be done to provide an opinion on the appropriateness and relevance of such revisions. The findings will be used to make conclusions regarding the state of efficiency attained thus far and provide recommendations on how to improve efficiency where possible.*

TE Analysis Technique / Approach	***Evaluation Criteria*** *(as per TOR)*	***Rationale | Justification***
Financial Planning and Management Assessment	*Efficiency*	*This assessment will determine if appropriate structures and processes are in place and optimized. The analysis will examine how the management controls - resolution of implementation issues, financial management, financing and funds management controls - have facilitated project implementation and if necessary, compliance with procurement standards. The assessment will include co-financing and leveraging analysis.* *An inflation analysis will provide closer examination of the data to establish adequacy of the budget limits adjusted for possible inflationary impacts. The objective is to estimate the cost variance up to TE. As such, cost and budget variance estimates will be utilised to assess the effectiveness and efficiency of financial planning.*
Risk Analysis | Assessment of Sustainability of project outcomes/	*Efficiency* *Sustainability Impact*	*To establish the extent to which project risk management processes, including those for environmental and social risks were employed in project implementation to ensure successful delivery of project outputs.* *To assess how risks (probability and impact) and issues, which affected project implementation, or otherwise, are likely to affect sustainability of outcomes beyond project completion.*
Institutional analysis	*Efficiency* *Sustainability* *Impact*	*To determine the structures and mechanisms in place for strategic and operational direction setting and decision making as part of the overall implementation approach. It will determine how well the institutional arrangements worked to achieve desired results. Also, how IDB supervision and backstopping supported project execution.* *Determine whether coordinating mechanisms among the project partners were successfully established and utilized and the pros and cons associated with these.* *The analysis will also assess the ability of project outcomes to continue to produce benefits beyond the life of the project and the institutional arrangements to catalyse impact, replication and scale-up.*

C. Annex 3: List of Stakeholders Consulted

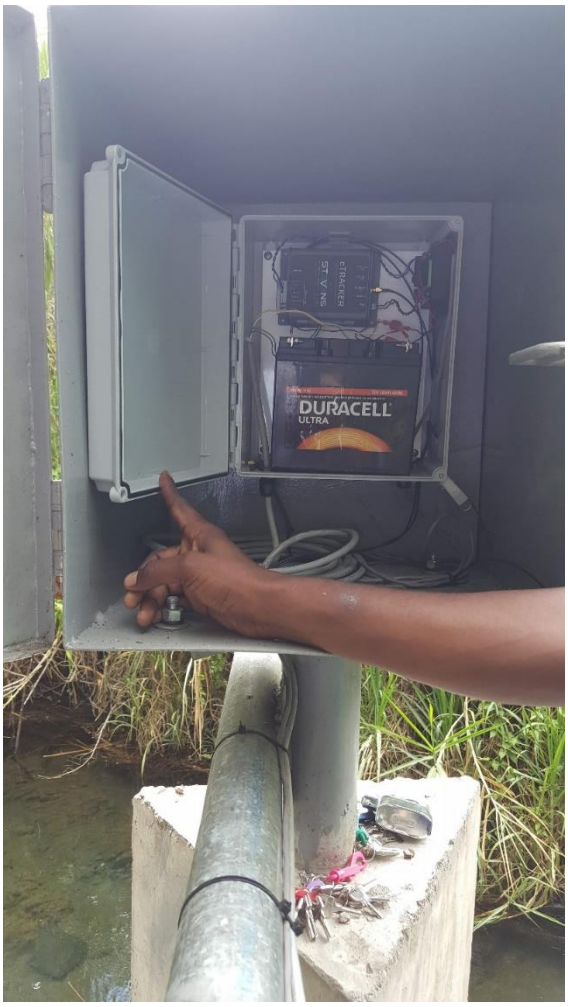
List of Stakeholders Consulted

Organization	Name	Contact details (Email)
Water Resources Authority	Michael Wilson	mwilson@wra.gov.jm
	Kevin Chambers	kchambers@wra.gov.jm
	Geoffrey Marshall	gmarshall@wra.gov.jm
NEPA PEU	Andre Reid	Andre.Reid@nepa.gov.jm
Met Service, Jamaica	Evan Thompson	e.thompson@metservice.gov.jm
	Adrian Shaw	a.shaw@metservice.gov.jm
PIOJ (External Cooperation Management Division)	Barbara Scott	Barbara_Scott@pioj.gov.jm
	Winsome Miller	Winsome_Miller@pioj.gov.jm
	Shashion Thomas	Shashion_Thomas@pioj.gov.jm
PIOJ (name)	Claire Bernard	Claire_Bernard@pioj.gov.jm
	Roxanne Valentine-Donegan	Roxanne_Valentine-Donegan@pioj.gov.jm
IDB	Sheries Ruddock	SHERIESR@iadb.org
Forestry Department	Rainee Oliphant	roliphant@forestry.gov.jm
	Davia Carty	dcarty@forestry.gov.jm
	Jerome Smith	jsmith@forestry.gov.jm
	Donna Lowe	dlowe@forestry.gov.jm
National Water Commission	Jason Oliphant	jason.oliphant@nwc.com.jm
	Lewis Lakeman	lewis.lakeman@nwc.com.jm
	Mark Barnett	mark.barnett@nwc.com.jm
PEU Procurement Officer	Christine Orgill	Christine.Orgill@nepa.gov.jm
IDB PES Consultant	Ashley Camhi	ashley.camhi@gmail.com
NEPA Public Relations Officer	Sharhi Miller	shahri.miller@nepa.gov.jm
Forestry Department	Damart Williams	
MEGJC	Gillian Guthrie	gillian.guthrie@megjc.gov.jm
	Joni Jackson	joni.jackson@megjc.gov.jm
NEPA CEO and team	Peter Knight	peter.knight@nepa.gov.jm
	Ainsworth Carroll	ainsworth.carroll@nepa.gov.jm
	Gregory Thomas	Gregory.Thomas@nepa.gov.jm
	Andrea Donaldson	ADonaldson@nepa.gov.jm
	Loureene Jones	Loureene.Jones@nepa.gov.jm
	Andre Reid	Andre.Reid@nepa.gov.jm
iDB TTL and OA	Yuri Chakallal	YURIC@iadb.org
	Jovan Johnson	JOVANJ@iadb.org
IDB TTL 2	Joseph Milewski	JOSEPHM@iadb.org
NEPA Environmental Management and Conservation Division	Anthony McKenzie	AMcKenzie@nepa.gov.jm
	Lisa Kirkland	LLatchman@nepa.gov.jm
	David Reid	dreid@nepa.gov.jm

Organization	Name	Contact details (Email)
PEU Communications Specialist	Wade Brown	Wade.brown@nepa.gov.jm
STEPA (St. Thomas NGO)	Terrence Cover	876-359-8639
IDB POD Development Team member	Juan de Dios Mattos	jmattos@iadb.org
Design Consultant (lead)	Dr. David Smith	david.smith02@uwimona.edu.jm
Office of Utilities Regulation	Cedric Wilson	cedric.wilson@our.org.jm
	Diana Cummings	diana.cummings@our.org.jm
Former Project Manager, Yallahs-Hope	Nelsa English Johnson	nelsa.english@gmail.com
Hydromet Specialist	Shimelis Setegn	ssetegn@gmail.com
Socio-economic consultant	Donovan Campbell	donovancampbell@gmail.com
RADA	Vaughn Barnaby	vaughn.barnaby <vaughn.barnaby@rada.gov.jm>
	Marina Young	Marina Young <marina.young@rada.gov.jm>
	Robert Tulloch	robert.tulloch@rada.gov.jm
	Mr. Pryce	TBC
Environmental Foundation of Jamaica	Allison Rangolan	Allison Rangolan <allison.mcfarlane@efj.org.jm>
	Barrington Lewis	blewis@efj.org.jm
Jamaica Conservation Development Trust	Susan Outokan	susanotuokon@yahoo.com
Hope Caribbean Co. Ltd. (KAPB I)	Deborah Bourne	Dbourne@hopecaribbean.com
	Pauline Brissett	PBrissett@hopecaribbean.com
WAMM Consultant	Thera Edwards	theraedwards@gmail.com
Watershed Policy Consultant	Leonie Barnaby	leonieabarnaby@gmail.com
Inception meeting Facilitator	Menno Valkenburg	menno.valkenburg@gmail.com
NEPA Projects Branch, PEU	Gregory Thomas	Gregory.Thomas@nepa.gov.jm
	Andre Reid	andre.Reid@nepa.gov.jm
	Loureene Jones	loureene.Jones@nepa.gov.jm
	Jodiel Ebanks	Jodiel.Ebanks@nepa.gov.jm

D. Annex 4: Photographs from Site Visits

Timber seedlings planted by the Forestry Department in the upper Hope River Watershed



WRA Stream flow station installed on the Hope River

Pineapple planted by farmers have the co-benefit of land management and income generation

The Watershed

E. Annex 5: Y-H Project RASCI

Stakeholder Analysis - RASCI Matrix Yallahs-Hope Project

R= Responsible; A= Accountable; S=Supportive C= Consulted; I=Informed

	Project Leadership										Project Management Unit							Implementing Partners							External Resources, Beneficiaries and Support																					
Role / Project Responsibility	**Executive Sponsor (PSC)**	**Project Sponsor (IDB)**	**MOFPS**	**PIOJ**	**MEGJC**	**NEPA (CEO)**	**Project Steering Committee**	**Technical Working Group of PSC**	**Projects Planning and Monitoring**	**NEPA Procurement (Committee and**	**Project Manager**	**Finance and Administrative**	**Procurement Officer**	**Project Officer**	**Technical Coordinator (3)**	**Project Driver**	**Communications Specialist**	**RADA**	**WRA**	**FD**	**NWC**	**MSJ**	**PIOJ/EFJ/JCDT**	**NEPA EMD, Pub. Ed**	**Consultants**	**External Partners/Collaborat**	**Beneficiaries**	**Local Producer**	**Civil Society**	**Local Authorities**	**Design Consultants**	**Former IDB TTL**	**IDB Design Team**	**IDB PM4R**	**OUR**	**NSDMD**	**ODPEM**	**TPDCo.**	**SDC**	**NIC**	**CIB (JACRA)**
Management & Coordination																																													
Governance-strategic framework, guidance, direction, AOP approval		**R/S**	**S**	**S**	**S**	**R/A**	**S/C/I**		**R**	**A**	**S**							**S**	**S**	**S**	**S**	**S**	**S**				**S**																	
Liaison with IDB		**R**				**A**					**R/A**	**S**	**S**		**S**		**S**																												
Supervision		**S**	**S**	**S**	**S**		**R**		**A**		**R**							**R/A**	**R/A**	**R/A**	**R/A**	**R/A**	**R**	**R**																				
Decision Making		**R/A**	**R**	**S**	**S**		**R**		**R/S**	**R/S**	**S**	**S**	**S**				**I**	**R/A**	**R/A**	**R/A**		**R/A**			**I**																				
Stakeholder coordination						**A**	**R**	**I**			**R/A**				**S**			**S**	**S**	**S**	**S**	**S**	**S**		**S**	**S**	**S/C/I**		**I**	**S/C/I**														
Activity integration						**A**	**R/A**	**R**	**S**		**R/A**																				**R**	**R**	**R**	**S**											
Activity and Component monitoring		**R**	**R**			**A**	**R/A**	**R**	**S**	**S**	**R/A**	**R/A**			**S**		**S**	**R**	**R**	**R**	**R**	**R**	**R**																				
Risk Management		**C/I**					**S/C/I**		**S/C/I**	**S/C/I**	**R/A**	**S**	**S**		**S**		**S**	**S/C/I**	**S/C/I**	**S/C/I**	**S/C/I**	**S/C/I**																						

Stakeholder Analysis - RASCI Matrix Yallahs-Hope Project

R= Responsible; A= Accountable; S=Supportive C= Consulted; I=Informed

	Project Leadership										Project Management Unit							Implementing Partners							External Resources, Beneficiaries and Support																			
Role / Project Responsibility	**Executive Sponsor (PIOJ)**	**Project Sponsor (IDB)**	**MOFPS**	**PIOJ**	**MEGJC**	**NEPA (CEO)**	**Project Steering Committee**	**Technical Working Group of PSC**	**Projects Planning and Monitoring**	**NEPA Procurement (Committee and**	**Project Manager**	**Finance and Administrative**	**Procurement Officer**	**Project Officer**	**Technical Coordinator (3)**	**Project Driver**	**Communications Specialist**	**RADA**	**WRA**	**FD**	**NWC**	**MSJ**	**PIOJ/EFJ/JCDT**	**NEPA EMD, Pub. Ed**	**Consultants**	**External Partners/Collaborat**	**Beneficiaries**	**Local Producer**	**Civil Society**	**Local Authorities**	**Design Consultants**	**Former IDB TTL**	**IDB Design Team**	**IDB PM4R**	**OUR**	**NSDMD**	**ODPEM**	**TPDCo.**	**SDC**	**NIC**	**CIB (JACRA)**
Financial Management																																										
Establish protocols for access to funds		**R**	**R**								**S**																			**R/ A**	**R/ A**											
Develop budget		**C**									**R/ A**	**C**	**C**		**C**					**C**		**C**			**C**					**R**												
Timely provision of funds to PEU, IPs	**I**	**R/ A/I**					**I**	**I**	**C/I**		**R**	**R**	**C**		**C**			**C**	**C**	**C**		**C**			**C**																	
Financial Administration	**I**	**C/I**					**I**	**I**	**C/I**	**C/I**	**R**	**R**						**R**	**R**	**R**		**R**			**I**																	
External Audit		**C/I**					**C/I**		**S**		**S/ C**							**C**	**C**	**C**		**C**																			
Procurement																																										
Prepare and implement Procurement Plan		**I**	**I**				**I**	**I**	**R**	**R/ A**	**R/ A**	**C**	**R/ A**		**R/ A**			**C**	**C**	**C**		**C**			**C**	**I**																	
Approve procurement plan and AOPs		**R**	**C /I**				**R/ C/I**		**C/ R**	**S**	**S**		**S**																													
Roll out procurements							**R/ C/I**		**S**	**R/ A**	**R**		**R**					**C/I**	**C/I**	**C/I**		**C/I**																				

Stakeholder Analysis - RASCI Matrix Yallahs-Hope Project

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	Project Leadership										**Project Management Unit**							**Implementing Partners**							**External Resources, Beneficiaries and Support**																
Role / Project Responsibility	**Executive Sponsor**	**Project Sponsor (IDB)**	**MOFPS**	**PIOJ**	**MEGJC**	**NEPA (CEO)**	**Project Steering Committee**	**Technical Working Group of PSC**	**Projects Planning and Monitoring**	**NEPA Procurement (Committee and**	**Project Manager**	**Finance and Administrative**	**Procurement Officer**	**Project Officer**	**Technical Coordinator (3)**	**Project Driver**	**Communications Specialist**	**RADA**	**WRA**	**FD**	**NWC**	**MSJ**	**PIOJ/EFJ/JCDT**	**NEPA EMD, Pub. Ed**	**Consultants**	**External Partners/Collaborat**	**Beneficiaries**	**Local Producer**	**Civil Society**	**Local Authorities**	**Design Consultants**	**Former IDB TTL**	**IDB Design Team**	**IDB PM4R**	**OUR**	**NSDMD**	**ODPEM**	**TPDCo.**	**SDC**	**NIC**	**CIB (JACRA)**
Monitoring and Evaluation																																									
Agree and sign off on RM		**R**	**I**	**I**	**I**		**S/ C/I**		**R**		**R/ A**	**C**	**C**		**C**		**C**	**C**	**C**	**C**		**C**	**I**	**I**							**R**	**R/ A**	**R/ A**								
Build Deliverables and Outputs		**I**					**R/ C/I**	**C**	**R**		**R/ A**	**C**	**C**		**R**		**C**	**R/ A**	**R/ A**	**R/ A**		**R/ A**		**S**	**R**	**R/ C/I**															
Review and approve all Technical Reports/Outputs/ Deliverables								**R/ A**																																	
Create Status, financial and other required Reports		**I**					**R/ C/I**	**I**	**R/ A**		**R/ A**	**R/ A**	**R/ A**		**R**		**S**	**R/ A**	**R/ A**	**R/ A**		**R/ A**		**R**	**R/ C**	**I**															
Track against Results Framework		**R/ A**	**R**	**S**		**R/ A**	**R/ S**		**R**		**R/ A**	**R/ A**			**S**		**S**	**S**	**S**	**S**		**S**		**S**	**S**																
Compliance with project objectives and policies and procedures of the Grant Agreement						**R/ A**	**R**		**R/ A**		**S**	**S**	**S**		**S**		**S**																								

Stakeholder Analysis - RASCI Matrix Yallahs-Hope Project

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	Project Leadership										**Project Management Unit**							**Implementing Partners**							**External Resources, Beneficiaries and Support**																		
Role / Project Responsibility	**Executive Sponsor (EA)**	**Project Sponsor (IDB)**	**MOFPS**	**PIOJ**	**MEGJC**	**NEPA (CEO)**	**Project Steering Committee**	**Technical Working Group of PSC**	**Projects Planning and Monitoring**	**NEPA Procurement (Committee and**	**Project Manager**	**Finance and Administrative**	**Procurement Officer**	**Project Officer**	**Technical Coordinator (3)**	**Project Driver**	**Communications Specialist**	**RADA**	**WRA**	**FD**	**NWC**	**MSJ**	**PIOJ/EFJ/JCDT**	**NEPA EMD, Pub. Ed**	**Consultants**	**External Partners/Collaborat**	**Beneficiaries**	**Local Producer**	**Civil Society**	**Local Authorities**	**Design Consultants**	**Former IDB TTL**	**IDB Design Team**	**IDB PM4R**	**OUR**	**NSDMD**	**ODPEM**	**TPDCo.**	**SDC**	**NIC**	**CIB (JACRA)**	
Supervision and administrative missions		R/A	S	S	S		C		C	C	S/C	S	S		S		S	C	C	C		C	C	I																	
Activity Implementation																																									
formal agreement with implementing agencies		C/I			C/I	R/A	C/I		R/A		S	S	S		S		S	R/A	R/A	R/A		R/A															C			
formal collaborative agreement with non-governmental organizations (JCDT EFJ)					C/I	R/C	I		S		S	S	S		S								R/A																	
compliance with project objectives		C/I					R		R/A		R/A	S	S		S		S	R/A	R/A	R/A		R/A			R															
Activity planning and implementation		I					R		R/A		RA	S	S		S		S	R/A	R/A	R/A		R/A																		
Beneficary group and individual participation											S				S		S/I	R/A				R		S		R/S/C/I									C/I	C/I				

Stakeholder Analysis - RASCI Matrix Yallahs-Hope Project

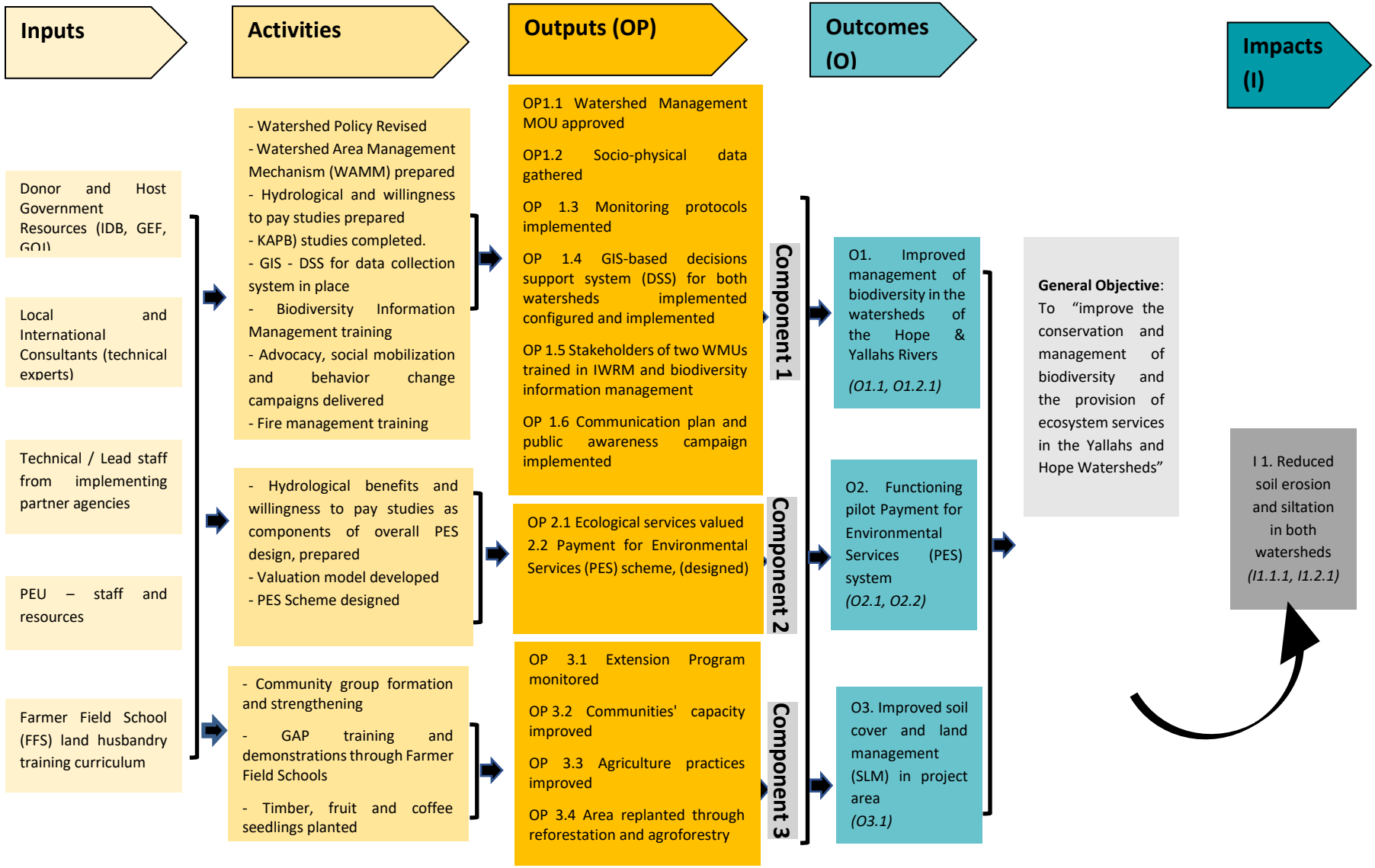
R= Responsible; A= Accountable; S=Supportive C= Consulted; I=Informed																																											
	Project Leadership										**Project Management Unit**							**Implementing Partners**							**External Resources, Beneficiaries and Support**																			
Role / Project Responsibility	**Executive Sponsor (GoJ)**	**Project Sponsor (IDB)**	**MOFPS**	**PIOJ**	**MEGJC**	**NEPA (CEO)**	**Project Steering Committee**	**Technical Working Group of PSC**	**Projects Planning and Monitoring**	**NEPA Procurement (Committee and**	**Project Manager**	**Finance and Administrative**	**Procurement Officer**	**Project Officer**	**Technical Coordinator (3)**	**Project Driver**	**Communications Specialist**	**RADA**	**WRA**	**FD**	**NWC**	**MSJ**	**PIOJ/EFJ/JCDT**	**NEPA EMD, Pub. Ed**	**Consultants**	**External Partners/Collaborat**	**Beneficiaries**	**Local Producer**	**Civil Society**	**Local Authorities**	**Design Consultants**	**Former IDB TTL**	**IDB Design Team**	**IDB PM4R**	**OUR**	**NSDMD**	**ODPEM**	**TPDCo.**	**SDC**	**NIC**	**CIB (JACRA)**	
Beneficiary monitoring											I				S/M		S/I	R/A						S/I			C/I															
Beneficiary capacity building															S/C			R/S									C/I/S															
Activity integration						R/A	R		R/A		S	S	S		S		S																										
Activity and co-financing tracking and reporting		R/A	R	R			R		R		R/A	S	S		S		S	R/A	R/A	R/A		R/A			R/C																
Communication and Information Dissemination																																										
Document and publicize lessons learned											R/A	S	S		S		R	C	C	C		C		S	C			C/I/S														
Develop project reports and other communication tools									S		R/A	S	S		S		R	R/C	R/C	R/C		R/C		R/S	C																
Provide updates and results as well as progress with implementation plans							S				R/A	S	S		S		S	S	S	S	S	S	S		S			C/I													

Stakeholder Analysis - RASCI Matrix Yallahs-Hope Project

R= Responsible; A= Accountable; S=Supportive C= Consulted; I=Informed

	Project Leadership										Project Management Unit							Implementing Partners							External Resources, Beneficiaries and Support																					
Role / Project Responsibility	**Executive Sponsor (GOJ)**	**Project Sponsor (IDB)**	**MOFPS**	**PIOJ**	**MEGJC**	**NEPA (CEO)**	**Project Steering Committee**	**Technical Working Group of PSC**	**Projects Planning and Monitoring**	**NEPA Procurement (Committee and**	**Project Manager**	**Finance and Administrative**	**Procurement Officer**	**Project Officer**	**Technical Coordinator (3)**	**Project Driver**	**Communications Specialist**	**RADA**	**WRA**	**FD**	**NWC**	**MSJ**	**PIOJ/EFJ/JCDT**	**NEPA EMD, Pub. Ed**	**Consultants**	**External Partners/Collaborat**	**Beneficiaries**	**Local Producer**	**Civil Society**	**Local Authorities**	**Design Consultants**	**Former IDB TTL**	**IDB Design Team**	**IDB PM4R**	**OUR**	**NSDMD**	**ODPEM**	**TPDCo.**	**SDC**	**NIC**	**CIB (JACRA)**	
Activity Design and Approval																																												
Conduct assessments and analyses to support project			C/I	C/I	C/I	S/C/I												C/I	C/I	C/I	C/I	C/I	C/I	C/I						R	R/A	R/A												
Design main elements of project			C/I	C/I	C/I	S/C/I												C/I	C/I	C/I	C/I	C/I	C/I	C/I						R/A	R/A	R/A												
Support submission to IDB Board and GEF				S																											R/A	R/A												
Project Inception																																												
Facilitate stakeholder review and planning																															S	S	R											
Support project initation				S		S																									S	S	S											

F. Annex 6: Y-H Project Logical Framework (reflecting EOP Adjustments)



G. Annex 7: TE analysis of key Y-H Project design documents

TE analysis of key Y-H Project design documents

Document	Key elements	Linkages	TE Comment
Project Grant Proposal (POD) 2013	Project execution and administration; Monitoring and evaluation; main risks, financing structure, ESS risks, financial instruments	M&E Plan, PEU activities	Provides the basis for the Y-H Project, with fundamentals related to the technical and managerial elements.
Monitoring and Evaluation Plan (2013)	M&E system and structures; simplified impact evaluation	M&E, RF	Important detailed methodology for RADA's implementation for Component 3 with treatment and control groups, with specific timing for evaluations. Explains the budget and details the work program. Survey questions are included in an Annex.
Project Risk Management	Risk Mitigation Plan, that identifies the risks associated with each activity, level of risk, relation to RF; linkages with budget and performance indicators, responsible agents, dates	AOPs, RF, Procurement Plan, Budget	Important to track the risks that could affect smooth delivery of project
Request for GEF Endorsement (25-9-2013)	Includes GEF requirements and detailed Project Document		Ratio of resources for international to local consultations was 1:1
Non-Reimbursable Financing Agreement between GOJ and IDB (October 1, 2014)	General and Special Conditions (incl. conditions for first and second disbursement); currency of funds held; procurement, incl. procurement planning; reporting, M&E (types of reporting to be done, data to be shared), non-experimental methodology for assessing impact; financial statements, incld. Audits;	Rural Development Report, M&E Plan, Procurement Plan, Risk Management Plan,	While there was to be an MOU for the activities; Component 3 activities were to be implemented via single source contracts to FD and RADA. RF and M&E Plan clearly defined as the basis for M&E activities. Timelines for key assessments defined (e.g. baseline KAP at start up, midway and EOP); CSM assessments by FD with RADA (star-up, mid-term and EOP)

Document	Key elements	Linkages	TE Comment
Rural Development Plan (April 26, 2012, document last updated 17/11/2017)	Profile of farmers in the project area; key challenges facing farmers, extension support and associated challenges, wider initiatives for SLM in the project area; Project extension programme for Component 3; recommendations for other supporting project components (e.g. integration of all levels of IWRM; updating legislative framework for IWRM; policy updates; squatter management and land tenure; communication; benefits	POD, M&E Plan, Component 3 implementation	Details on project's SLM practices and extension methodologies and demo plots, including selection of beneficiaries; proposed activities and monitoring of the extension programme (to be owned and used primarily by RADA). Work plans and budgets included. Should have also involved other MICAF units e.g. Databank. KAP study emphasized as a first step. Assumed the FD and RADA would have included in their organizational plans, new farmer groups and LFMCs to be established. Other stakeholders who were to be involved included Coffee Industry Board (now Jamaica Agriculture Commodities Regulatory Authority); Jamaica Business Development Company; Social Development Commission; Jamaica Conservation and Development Trust; National Irrigation Commission; Tourism Product Development Co. JCDT and SDC were to have more integral roles in the communities for awareness, sensitization and group development and strengthening
Payment for Ecosystems Services Scheme (2/12/2012)	Case study to show framework for the PES; relation to the PDO and specifically YH WMUs; scope of the PES scheme (incl. financing mechanism, payment options); beneficiaries; financial flows; beneficiaries WTP; legal structures; payment guide; risks; compliance indicators; implementation costs; related TORs e.g. legal officer	Component 2 implementation	This document already designed the PES, and it was for the PEU and key TIAs to move the design to implementation. This would have meant CATIE's involvement was redundant and instead, the project should have identified the next steps (e.g. stakeholder agreement and Cabinet approval for the regulations as required; work planning, M&E establishment, PES Steering Committee launch; PES Operations Manual etc.) to move to implementation of a pilot, using the resources available

Document	Key elements	Linkages	TE Comment
Project Institutional Capacity Assessment (November 2011)	Assessed, using the ICAS methodology, NEPA's capacuty as Executing Agency. Included systems for: Activities Programming; Personnel Management; Administrative Organization; Goods and Services Administration; Financial Management; Internal Controls; External Controls. Provided detailed (low cost) recommendations for improvements to the seven systems for implementation of the Y-H Project and also for general NEPA institutional strengthening	EA/PEU responsibilities	The assessment results were not well integrated in NEPA's operations. Implementation of these recommendations would have served the organization well, as EA. The assumption for NEPA, as EA, was that instead of approaching the project as an add-on to its services, it would have been sufficiently mainstreamed in the organization's operations, and the systems used for overall management and administration of the project. This would have included coordination of all relevant technical, management and administrative units of the entity to support project implementation. NEPA's mandate and coordinating role for watersheds could have been more developed and exercised to shift project implementation from an individualized approach to a more coordinated and integrated one. The following were not evident as recommended: 1. A long term perspective on project effectiveness and M&E, especially as it concerns the achievement of the PDO, beyond the project's five year duration, given the programmatic nature of the initiative. Evidence of short term focus as described in the ICAS with an output oriented emphasis; 2. Organizational Manual to be elaborated to support greater internal coordination and collaboration among its Divisions, which would have served the project well; 3. High-level vision for the long term impact, through NEPA's Advisory Board; 4. Especially as it relates to the elaboration of Development Orders and their effectiveness, and in particular related to the project, how the project played a part in the updates to the DOs for KSA and St. Thomas; 5. Knowledge transfer and capacity building on IDB policies and procedures for future IDB loans and technical cooperation; and 6. Elaboration of a Procurement Manual (internal), that would have been useful for the PEU in guiding the procurement steps.

Document	Key elements	Linkages	TE Comment
Hydrologic Modelling Study (June 2012)	Conducted segmentation and sub-basin delineation; defined Land Use Scenario; Conducted initial analysis of sediment yield, water flows. Established clear monitoring protocols, including the costs for portable turbidity and flow meters and associated capacity building (training of personnel);	Component 2 implementation	Consultant highlighted the data limitations, however, stakeholders. Early into implementation, stakeholders identified the study as "flawed" and time and resources had to be made available to undertake a new study during project implementation. Stakeholder issues with the initial hydro-met assessment included data quality (e.g., scale incompatibilities using digital elevation model at 10,000 m2 to make predictions at the farm level), availability and adequacy (sparse land cover data) that led to accuracies of the modelling outputs. The identified flaws with the study had serious implications for project implementation and the timely achievement of results. The updated study did not commence until 2018, around the time of the MTE. This resulted in major setbacks for the project that would also have impacted the achievement of results as defined in the Results Framework (RF).
Carbon Stock Monitoring System (July 2012)	Identified the roles and responsibilities for FD and local entities e.g. LFMCs and the JCDT and gave consideration for capacity needs with a capacity building strategy; considered the work to be done for the Y-H Project a pilot for expanded national work; established the key data needs and methodologies for the monitoring assessments; timing of assessments; provided TORs for consultants, with timelines and budgets;	Carbon mitigation potential, RF, M&E Plan	The consultant concluded that under the conservative assumptions followed in the calculations undertaken, more than 5 times as much area of interventions (5670 ha) would be needed to achieve mitigation targets described in the Project document. This conclusion was not used to update the project impact targets before submission for approval and project start-up. Further to this the capacity of FD was not built to adequately conduct the assessments as defined along specific timelines. Consequently, close to project closure, the design consultant has been hired to conduct an EOP assessment to fill the gaps and determine potential mitigation achieved.
Biodiversity, Forests, Land Use and Climate of the Hope and Yallahs Watersheds (2/10/2012)	Provided a characterisation of the Y-H WMUs. Included recommendations for monitoring of biodiversity and drew on lessons and best practices of the IWCAM project for community based bio-monitoring.		Not clear how this was utilized as there was no direct monitoring activities in project implementation

Document	Key elements	Linkages	TE Comment
Integrated Communications Strategy (Sharrier, undated)	Defined key learnings, locations and target groups and communication channels. Identified linkages with other planned programmes and initiatives. Defined the communications strategy (incl. messages, subjects, activities and budget). A M&E plan included. TORs for Communications Specialist prepared	M&E Plan, Communications Strategy	Not clear how this document was used
Data Mapping Component (4/2012)	Defined the multi-layered IRWM data sets needed for assessing and monitoring watersheds. Included pre-design work for the GIS DSS and defined consultant's expertise for implementation. Inventoried datasets existing in various agencies, including their gaps and limitations.	GIS DSS activity	Not clear if this was a reference for the GIS-DSS consultant during implementation. TOR does not give that indication
Economic Analysis (undated, IDB)	Ex-ante cost benefit analysis, IRR and sensitivity analysis. Concluded the project was viable and would produce benefits	Final Evaluation	

H. Annex 8: Specific assumptions guiding the Component 3 extension programme

Specific assumptions guiding the Component 3 extension programme (Smith, 2012)

Acknowledging the complementary strengths of the various extension providers, the Project's extension programme would be implemented by a "core" team comprising RADA (plus the NIC's On-Farm Water Management Unit), FD, NEPA and JCDT. During implementation, these entities would interface with wider stakeholders in the Project Area – including public and private sector entities, other NGOs and CBOs.

- One of the first activities, which was to be carried out, was the **first of three KAP studies**, which would explore *inter alia* persons' knowledge of the watersheds (including the environmental services and how to protect these), good land husbandry practices, and biodiversity management. This KAP study would cover all the communities in the Project area; and its findings would be used to develop the rest of the extension activities – especially the precise selection criteria of beneficiaries, progress indicators, extension materials and training.
- The extension messages and training methods used would vary according to the target groups (see below), and would cover general issues involved in integrated watershed management as well as specifics of SLM measures. The project would also include capacity-building activities involving farmers' groups as well as LFMCs.
- Given the importance of women in these communities, all extension activities would encourage their strong involvement and active participation e.g. as respondents in the KAP studies, in the testing of extension materials, in training sessions as well as in capacity-building efforts of the community-based organisations.
- Farmer-to-farmer learning will be encouraged wherever possible as this has been found by previous projects to be both: an efficient means of communication, and (ii) most effective in encouraging persons to change their behaviour.

I. Annex 9: Y-H Project Performance Indicator Tables at EOP

Y-H Project Performance Indicator Tables at EOP

Specific Objectives/Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
Impact Nbr. 1: Reduced soil erosion and siltation in both watersheds						
1.1 Sedimentation in waterways	Gauges	0	2013	P	0	56
				P(a)	9	
				A	5	
2.1 Payment for Environmental Services (PES) system functioning at NEPA	Mg CO2e per annum	1881	2013	P	0	21
				P(a)	187495	
				A	38,517	
Specific Objectives/Indicator	**Unit of Measure**	**Baseline value**	**Baseline year**	**Targets and Actual achievement**		**% Achieved**
Outcome Nbr. 1: Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers & the Blue and John Crow Mountains						
1.1 Watersheds covered by development orders that include land cover and soil management (SLM)	Percentage	0	2013	P	0	100
				P(a)	80	
				A	80	
1.2 Agencies updating data in DSS (Decisions Support System) according to agreed protocol	Agencies	0	2013	P	0	100
				P(a)	5	
				A	5	
Outcome Nbr. 2: Functioning pilot Payment for Environmental Services (PES) system						
2.1 Area under contract	Hectares	0	2013	P	0	0
				P(a)	100	
				A	0	
2.2 Contracts signed	Number	0	2013	P	0	0
				P(a)	200	
				A	0	
Outcome Nbr. 3: Improved soil cover and land management (SLM) in project area						
3.1 Area of land in soil cover and land management (SLM) program	Hectares	0	2013	P	0	100
				P(a)	1136	
				A	1296	
Outputs	**Unit of Measure**	**Baseline value**	**Baseline year**	**Targets and Actual achievement**		**% Achieved**

Specific Objectives/Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
Component #1						
1.1 Watershed Management MOU approved	MOU	0	2013	P	0	
				P(a)	6	100%
				A	6	
1.2 Socio-physical data gathered	Data set	0	2013	P	5	67%
				P(a)	3	
				A	2	
1.3 Monitoring protocols implemented	Protocol	0	2013	P	0	100%
				P(a)	1	
				A	1	
1.4 GIS-based decisions support system (DSS) for both watersheds implemented configured and implemented	System	0	2013	P	1	
				P(a)	1	100%
				A	1	
1.5 Stakeholders of two WMUs trained in IWRM and biodiversity information management	Persons	0	2013	P	60	100%
				P(a)	60	
				A	60	
1.6 Communication plan and public awareness	Annual campaign	0	2013	P	4	100%
Campaign implemented				P(a)	4	
				A	4	
Component #2 Design and implementation of a market-based incentive scheme						
Output #1						
2.1 Ecological services valued	Studies	0	2013	P	2	100%
				P(a)	2	
				A	2	
2.2 Payment for Environmental Services (PES)	Scheme	0	2013	P	6	100%
				P(a)	1	
				A	1	
Component #3 Improved soil cover and land management (SLM) in project area						
3.1 Extension programme monitored	KAP study	0	2013	P	1	50%
				P(a)	2	
				A	1	
3.2 Communities' capacity improved	People	0	2013	P	225	100%
				P(a)	350	

Specific Objectives/Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved
				A	350	
3.3 Agriculture practices improved	Communities	0	2013	P	6	100%
				P(a)	8	
				A	8	
3.4 Area replanted through reforestation and	Hectares	0	2013	P	400	100%
Agroforestry				P(a)	299.3	
				A	564	
Component #5 Monitoring, evaluation, and audit						
Output #1						
5.1 Project evaluations	Evaluation	0	2013	P	0	100%
				P(a)	2	
				A	2	
5.2 Project audits	Audit	0	2013	P	0	100%
				P(a)	6	
				A	6	

J. Annex 10: Ex-post Carbon Sequestration Assessment Report

Jamaica National Environment and Planning Agency (NEPA)
Inter-American Development Bank (IDB)

Integrated Management of the Yallahs/Hope River Watershed Management Project

Contract
#NEPA-07-IDB-YH-01

Product #3:

Ex-post carbon sequestration assessment report

Prepared by:

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30 November 2020

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1. Executive Summary

The Blue and John Crow Mountain ranges in Eastern Jamaica are unique areas due to their high levels of diversity and the multitude of ecosystem services they provide. Namely among these is water provision for domestic, agricultural, and industrial uses to 40% of Jamaica's population. Despite their importance, unsustainable land use practices continue to endanger the ecological stability of the area. Considering the continued degradation trajectory, the watersheds face if no external measures are taken, the Government of Jamaica and the IDB designed and implemented the "Integrated Watershed Management for the Yallahs and Hope Rivers Watersheds" project. The project was designed in 2012 and its implementation closed in early 2020.

The project's objective was "to reduce pressure on natural resources in the Yallahs River and Hope River Watersheds of the Blue Mountains by increasing the practice of SLM resulting in improved management of Biological Diversity and enhanced flow of ecosystem services that sustain local livelihoods." Among its activities, the project planted trees in abandoned fields on degraded lands and in local farms by implementing agroforestry systems using a mix of timber and fruit tree species with the combined goal to restore degraded areas, reduce forest degradation and deforestation and to sequester carbon from the atmosphere. This latter climate change mitigation impact needs to be assessed upon the closure of the project (*ex-post* scenario) and compared to the *ex-ante* (scenario prior to project implementation) estimates to obtain the actual climate mitigation impact of the project. This document describes the necessary background and technical information used for calculating carbon storage in the project priority areas, and reports on the comparison between *ex-ante* and *ex-post* (mitigation impacts of the project. We also describe barriers precluding a full carbon balance calculation and the next steps required to complete a full *ex-post* assessment.

This assessment is one component of a larger consultancy looking at the overall mitigation impact of the project, evaluating current national capacities for carbon monitoring for the project area and proposing actions to enhance the country's national forest carbon monitoring system and calculating the potential carbon market benefits of the project's implementation. All procedures follow IPCC Good Practice Guidelines (GPGs) which allow for transparent, consistent, comparable, complete, accurate, verifiable, and efficient recording and reporting of changes in carbon stocks and/or changes in GHG emissions over time. This will also allow for the consistent scaling-up of local carbon accounting from the project to the national level necessary for Jamaica's international reporting of climate change mitigation goals. Furthermore, the monitoring system can serve as a demonstration activity now that Jamaica is moving forward with its national REDD+ strategy.

The climate change mitigation potential of the project was calculated using official project documents and data provided by NEPA, and personal communications with the project's coordinator to clarify, confirm and validate key information and secondary sources. To assess the climate change mitigation impact of any land use and/or development project, a baseline scenario ("business as usual", or no project implementation) must first be established. This

baseline serves as the benchmark against which the mitigation impact of the project interventions is compared.

We used FAO's *ex-ante* carbon balance tool (EX-ACT v. 8.6.2)[60]. This tool aids in estimating the carbon balance of AFOLU-type projects and was built to support IPCC GHG accounting. Because the proposed range and magnitude of project interventions changed dramatically relative to project design and because the original baseline and project mitigation impact was not calculated using this tool, the *ex-ante* and *ex-post* estimates cannot be directly compared. An attempt was made to recalculate the project's baseline scenario and the impact of project interventions using only the EX-ACT tool. However, because of the highly data deficient current circumstances related this project component, our estimates must be taken as broad approximations only.

1. Methodological Approach

IPCC and other good practice guidelines require project implementers to compare baseline carbon stocks and dynamics before the project implementation (*ex-ante* scenario) against calculations following the lifetime of the project (*ex-post* scenario). This comparison provides the net mitigation balance of any project and is a key component in assessing its climate action impact.

3.1 Data Requirements

There are 2 basic types of data required for calculating carbon balances from land use development projects:

1. "Activity data": these represent the magnitude of land area (in hectares) which change from one land use/land cover category to another due to project activities.
2. "Emission factors": these are the differences in carbon (CO_2) stocks among land use transitions related to the project.

1. <u>Activity data</u>

The magnitude of area change among categories are the "activity data" component of the carbon balance calculations. To produce these data and calculate the full carbon balance of the project, an updated land use change matrix comparing the actual area of project interventions against the original land use category is required but was unavailable. The historical land use/land use

[60] EX-ACT is available for download at: http://www.fao.org/tc/exact/ex-act-home/en/

change study required to document the original land use categories and compare them to the current ones has not been done. Jamaica has land use maps for 1998, 2013 and 2017. However, the differences in remote sensing technologies, analytical procedures, land use/land cover classification categories preclude any robust comparison along this timeline. In addition, none of these dates match the timescale of the project. Thus, only tabular data extracted from official project documents and reports were used for this consultancy.

2. <u>Emission factors</u>

These factors represent the magnitude of carbon (or, more generally, GHG) emissions due to any given land use change. Other activities such as fertilizer use, fire intensity and frequency, as well as energy and fuel consumption data are necessary to supplement the emission factor estimates. Because the carbon monitoring system proposed during project inception was not implemented, no carbon stocks data are available for us to calculate these emission factors. Fertilizer use was restricted to manure applications during planting in some areas only. Partial information on fire use for site preparation and estimates of fuel consumption during the project's field activities was made available to us. Details on both variables are described in the following section.

3.2 Analytical tools and calculations

Our methodological approach includes the following basic steps:

1. *Data overview:* This step helped us understand the general context of the project, its initial expectations and actual actions implemented on the ground. It included reviewing the ex-ante carbon estimates, the original calculation tool and project assumptions. We also worked closely with NEPA and other government actors involved in the project's implementation to characterize project interventions in terms of their location, area, original land use, type of project intervention (see Table 1), management applied (species used, site preparation, fertilization, etc.) among other information required to adequately calibrate the tool and estimate the mitigation impact of the project's activities[61].

2. *Parameterize EX-ACT tool:* This requires setting up land use transition matrices and feeding the tool with all available information in terms of land uses in the project intervention area (e.g. annual crops, tree plantations, grasslands, etc.), characteristics of each of those, and coding specific management variables (fertilization – Y/N and rates, fire intensity, water management). The quality of the outputs from this step depends on the breadth and depth of information available for the calculations, which, as mentioned before, is broadly lacking, forcing us to default to Tier 1 for all our calculations.

[61] See attached supporting Excel database files.

3. *Quantify net mitigation impact:* Once the tool was parameterized with project intervention details, the results were compared to the *ex-ante* estimates. The actual net mitigation impact of the project results from comparing the expected versus the actual mitigation impact. These calculations will need to be refined in later assessments, as additional and more specific information is made available.

3.2.1 Data overview

All available information was supplied by our Forest Department liaison, Mr. Andre Reid in the form of an electronic repository containing GIS information, project reports[62] and other available documentation from which we extracted necessary details (e.g. types of interventions, their areas and locations, management practices) for the carbon calculations (Table).

Data QA/QC was performed by cross-checking information among data sources and electronic databases provided. Differences found in RADA reports related to community versus intervention areas had no relationship with or effect on our calculations. They were noted in our database and safely disregarded. On the other hand, we found the areas reported by the Forest Department (FD) in their official project reports is lower than the total area we documented under project implementation once all data sources were tallied. This is due to other organizations also implementing plantings for the project, but the information not adequately systematized.

Table1. Summary land use matrix of interventions by the "Integrated Watershed Management for the Yallahs and Hope Rivers Watersheds" project, Jamaica.

Original land use	Project interventions by existing land use (area in hectares)				
	Reforestation (fire)	Reforestation (no fire)	Orchard	Border planting	Mixed cropping
Fields	40.25	37.58			
Fields, Herbaceous crops			268.84		
Unspecified		367		64.73	145.68
Total	**40.25**	**116.60**	**268.84**	**64.73**	**145.68**

[62] Final project reports from the Forest Department and RADA were provided and are the main source of quantitative and qualitative information for this report.

Manure usage was restricted to the 274 ha replanted by Jamaica's Rural Agricultural Development Authority (RADA)[63]. We used a value of 12 lbs of nitrogen per ton of manure[64] to calculate the total amount of N fertilization. Data on the total amount of N applied through manure varies between 1.1532 and 2.0284 tons of N, depending on the source of information. While RADA reports state 1922, 50 lbs bags were applied in total, the Forest Department reported to us 2.2 lbs of manure/tree planted by RADA[65]. Following the IPCC conservative calculations principle, we favoured the use of the higher rate of application because it results in higher emissions, thus underestimating the mitigation impact[66].

In terms of fuel consumption, we have documented "RADA utilized 4 [sic. 2?] pickups during the period both of which would consume an average of 200 litres [0.2 m^3] of diesel fuel per week over the life of the consultancy (9 months). For approximately one months out of the consultancy a truck was used to assist with the delivery of seedlings and manure, the specific consumption for this unit is unknown. … Forestry Department utilized 2 pickups during the period both of which would consume on average 80 litres [0.08 m^3] per week over the life of

3.2.2 EX-ACT calibration

For this consultancy, we calibrated and used FAO's ex-ante carbon balance tool (EX-ACT v. 8.6.2)[67]. This tool aids in estimating the carbon balance of AFOLU-type projects and was built to support IPCC GHG accounting. It has been used around the world under a variety of agroforestry, watersheds, restoration, grassland rehabilitation and other development and climate action projects. Importantly, in our consultancy's data-deficient context, it has the key advantage of offering current IPCC Tier 1 values. It also covers a broad range of land use types, their transitions and management interventions, and it allows for landscape-scale estimates of GHG flows with and without project interventions. Because the latter information is not available at this time (no baseline land use map or tabular data are available for the actual project implementation timeline), our calculation relies on the area assumptions used during project implementation (Table; 1031 ha potentially available for project interventions).

Except for the rate of nitrogen application and the reported incidence of fires for some of the database, Tier 1 data was used for this modelling exercise. First, the climate description was set to Tropical Wet, with the typical Latin America and the Caribbean (LAC) soil type option available in the tool. Although the project started much earlier, tree planting activities were undertaken

[63] Reid, A. Jamaica Forest Department. Personal communication.
[64] Value from: https://water.unl.edu/manure/manure-value (Last checked 11/29/2020).
[65] Reid, A. Jamaica Forest Department. Personal communication.
[66] The total magnitude of manure-related emissions using both sources of information ranged from 25 to 28 tons CO_{2eq} for the entire project lifetime; basically, a negligible amount relative to the total project emissions.
[67] EX-ACT is available for download at: http://www.fao.org/tc/exact/ex-act-home/en/

towards the end of the project and lasted approximately 9 months only. Thus, the implementation phase was set up as 0.75 years, and no capitalization phase used.

Data was input into the Land Use Change module following the area per intervention matrix derived for the project (Table) after reviewing all available information made available to us. Tree plantation activities were coded as per Table and, because only Tier 1 values were used. Because no other types of interventions or improved management was reported, the remaining calculation modules were not used. Nitrogen application through manure was included in the Inputs and Investments module as described in Section 1.2.

Table 2. Land use matrix showing interventions proposed during the inception of the "Integrated Management of the Yallahs/Hope River Watershed Management" project, in Jamaica. Areas in the table are in hectares.

		Proposed Interventions by existing land use (areas in hectares)					
Current land use	Area (ha)	Timber plantations (Taungya)	Agroforestry Home/multi-story gardens	Boundary trees/living fences & windbreaks	Hedgerows & live barriers	Fallow enrichment	Degraded land restoration
Pure crops stand	13471						
Mixed crops stand	5647		201	44	13		
Food forest	358		201				
Pasture	2720			44	13		
Timber forest	989						
Ruinate & Fallow	6303	429				25	61
Other land	708						
Total	30196	429	402	89	25	25	61

Source: Area of "Current land use" from: Statistical Institute of Jamaica (2007)[68]. Intervention areas follow Cifuentes (2012).

Note: The table suggests how many hectares of a given proposed intervention are to be established on an existing current land use category. For example, 429 hectares of timber plantations would be established in land currently under the "Ruinate & Fallow" land use. For this report we assumed the total area available for interventions was 1031 ha.

3.2.3 Net carbon balance calculation

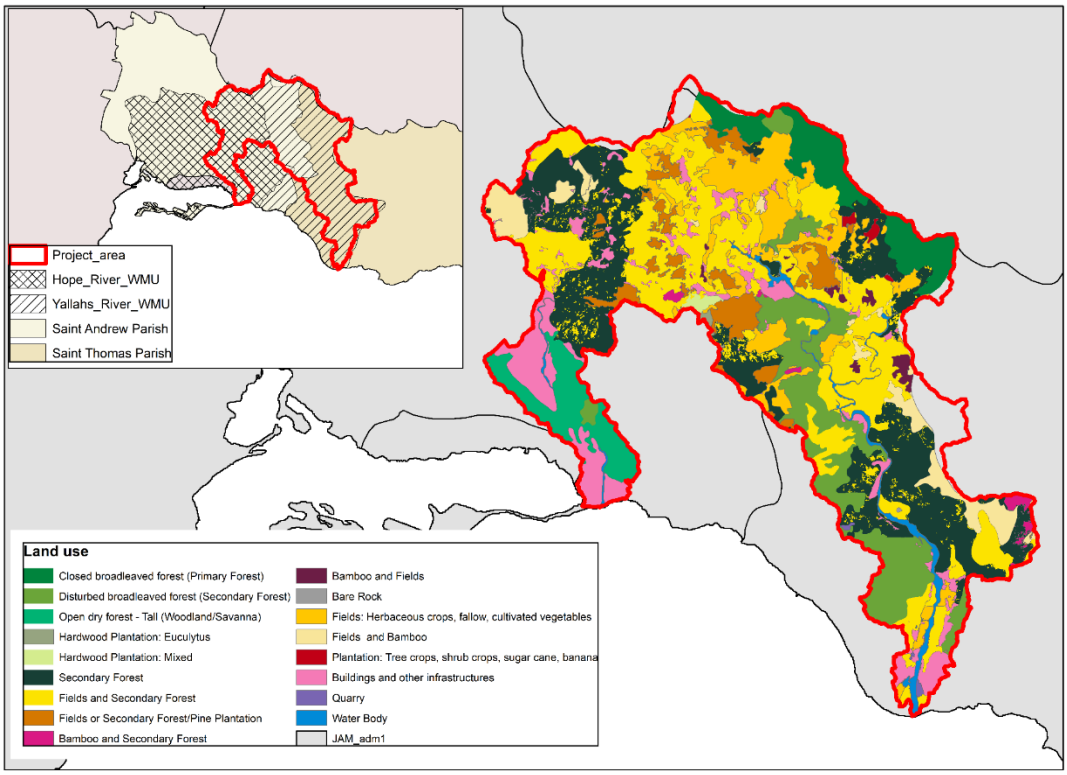
Since no data are available to determine the actual type and area of available land use categories to receive project interventions, the current baseline could not be calculated and we were forced

[68] Statistical Institute of Jamaica. 2007. Census of Agriculture 2007; Preliminary Report. Statistical Institute of Jamaica. 32 p.

to use the original baseline data from the project design phase (Cifuentes 2012). The net carbon balance for the project was calculated for 0.75, 5, 10 and 15 years of implementation. The carbon balance calculations were done using all three growth models available in the EX-ACT tool[69]. This allowed us to "bracket" the results and observe the potential range of results and thus verify the consistency or reliability of the model. Although an imperfect comparison because different calculation tools were used during project inception and present time, our results also allow for comparisons between the original estimates and the ones resulting from the project's implementation.

3.3 Scaling-up of carbon balance estimates

Because a consistent historical timeline of land use dynamics is unavailable, we cannot perform the proper and full spatially explicit landscape-scale modelling exercise that would have been useful to assess broader landscape and indirect impacts of the project. Despite this shortcoming, we used the only available land use map (2017, based on 2013 data) for the project to calculate landscape scale carbon stocks (Figure, Annex 1).



[69] Growth rates in EX-ACT can be set to "exponential" (non-linear growth, which may better reflect actual tree growth over time), "instantaneous" (100% change in a single time step) or "linear" (using an average yearly growth rate).

Figure 1. Land use/land cover map for the "Integrated Management of the Yallahs/Hope River Watershed Management" project area in Jamaica. The map uses 2013 data and was last updated in 2017. Source: Forest Department (2015)[70].

Furthermore, because local carbon density data was not collected by the project and, to go beyond default Tier 1 estimates, our calculations were based on carbon data originally compiled by Cifuentes (2012) for the project's preliminary land use categories. There is not a 100% correspondence between that dataset and the current land use/land cover categories, and because of the three previous reasons, there is an unknown bias (both in direction and magnitude) associated with this calculation. Because of the mismatch in the date of the available map and those of the project's lifetime, our landscape scale calculations must be taken as an approximation and cannot be used to assess project impacts properly and exactly at that scale.

Although we have the full land use/land cover classification (Figure), we extracted that dataset those categories for which carbon stocks could be calculated: natural ecosystems, productive lands, forest plantations, etc. We excluded infrastructure, water bodies, bare rock, and quarries because they do not present any significant actionable carbon stocks.

4. Results and discussion

4.1 Net carbon balance

The level of details available allowed for a Tier 1 calibration of EX-ACT's LUC module. We systematized information for 924.08 ha of project implementation (Table 1); 444.83 ha of reforestation of denuded lands done by the FD and other partners and the remaining split across fruit orchards, border planting, and mixed cropping done by RADA. Based on information provided by NEPA, 48% of the entire area of intervention was dedicated to reforestation actions, and agroforestry systems established in the remaining area (29% of the total area in mixed edible fruit orchards, 16% in mixed cropping, and the remaining percentage planted as border trees).

The *ex-ante* direct net mitigation potential of this project was estimated during its design at 196902 $MgCO_{2e}$ for the first 5 years of the project (Cifuentes 2012), thus providing considerable climate change mitigation benefits. The final mitigation impact of the project ranges between 23691 and 38517 $MgCO_{2e}$, 5 years after establishment and depending on growth function used

[70] Forestry Department. 2015. Jamaica's Land Use Cover Assessment – A comparative assessment of Forest Change between 1998 & 2013. Forest Resource Information Management Branch-GIS Unit.

in the EX-ACT tool. As expected, those values continue to increase, reaching between 304850 to 601372 MgCO2e, 15 years after plantations were established.

Table 3. Summary of baseline, *ex-ante,* and project (*ex-post*) net carbon balance for the "Integrated Management of the Yallahs/Hope River Watershed Management" project, in Jamaica.

	Year			
	0.75	**5**	**10**	**15**
Baseline	--	9407	18845	28314
ex-ante net balance	--	196902	409808	622605
Project (*ex-post*) net balance (Linear)	23691	107545	206198	304850
Project (*ex-post*) net balance (Exponential)	31993	162892	316899	470902
Project (*ex-post*) net balance (Immediate)	38517	206386	403879	601372

Notes: Values in the table are in units of $MgCO_{2e}$. Baseline and ex-ante net balance data from Cifuentes (2012).

4.2 Landscape-scale carbon

The total landscape-scale carbon stocks in the Yallahs-Hope project area add to just over 1 million tons of carbon (Table). Close to 70 % of all carbon found in the project's landscape is in areas with some type or level of disturbance, mostly some type of secondary forest association. Indeed, the land use/land categories currently storing the most carbon are "fields and secondary forests" (26 % of the total), "secondary forest" (22 %), and "disturbed broadleaved forest (secondary forest)". Together, they represent a total of 720582.82 MgC. This is due to the large area covered by these categories, despite having lower carbon stocks per unit area (average 58.8 MgC·ha) than other land use/land cover categories, such as plantations, closed and disturbed broadleaved forest and hardwood plantations (which reach upwards of 80 MgC·ha).

Agriculture fields and land uses associated with bamboo have the lowest carbon stocks among all the categories included in the calculation. However, these will need to be revised because no local carbon density data are available.

5. Conclusions and recommendations

We describe in this section the main current barriers and next steps for a full carbon balance calculation. The accuracy of any assessment of GHG balances from climate change mitigation, conservation, avoided deforestation and similar projects depends upon the quality of data available. We worked on a severely deficient data environment for this project and used IPCC "Tier 1" default values in our calculations because local and/or national data (IPCC "Tier 2") are not readily available for all components of the calculation. Thus, our results can only be taken as a first approximation to the project's real net mitigation impact based on what information is currently available.

We strongly recommend that the carbon monitoring program proposed at project inception is developed fully, incorporating additional recommendations and procedures from this consultancy's remaining products. With local tree growth (ideally by species), local allometric equations and carbon density data taken over time across at least the most common land uses in the watershed, future estimates will be considerably more robust. Currently, there are no field-based carbon stock values for several of the land use/land cover categories found in the project area (e.g. bamboo, fields, secondary forests, plantations, among others; Table).

In addition, detailed GIS information on project polygons and interventions (not just point locations), combined with a historically consistent land use/land use change analysis must be performed on the project area (and its encompassing landscape) so that an even more robust estimate of net carbon balances can be made. Finally, as with any other sub-national climate change mitigation project, data from the Yallahs-Hope must be harmonized with the national forest inventory cycle and procedures and the resulting data incorporated into the national REDD+ MRV system and the national greenhouse accounting and reporting efforts.

Table *4*.Total landscape-scale carbon stocks by land use/land cover category in the "Integrated Management of the Yallahs/Hope River Watershed Management" project area in Jamaica.

Land use/cover category	Area (ha)	Aboveground carbon (MgC·ha)	Total carbon (MgC)
Bamboo and fields	166.73	20.00	3334.51
Bamboo and secondary forest	166.17	47.78	7939.82
Closed broadleaved forest (primary forest)	1435.84	88.22	126669.98

Disturbed broadleaved forest (secondary forest)	2648.88	82.08	217419.99
Fields and bamboo	1023.35	20.00	20466.97
Fields and secondary forest	5739.89	47.78	274252.16
Fields or secondary forest/pine plantation	1175.08	63.16	74217.92
Fields: herbaceous crops, fallow, cultivated vegetables	2251.19	20.00	45023.77
Hardwood plantation: *Eucalyptus*	39.10	80.77	3157.76
Hardwood plantation: mixed	72.16	80.77	5828.15
Open dry forest - tall (woodland/savanna)	1047.74	40.29	42213.50
Plantation: tree crops, shrub crops, sugar cane, banana	62.37	80.77	5037.92
Secondary forest	4790.93	47.78	228910.68
Total	**20619.43**	**- -**	**1054473.10**

Sources: Land use/land cover area from Forest Department (2015). Aboveground carbon compiled by Cifuentes (2012). Total carbon are our own calculations.

5.1 Interaction with national authorities

We are grateful to be able to have the support of the project's coordinator at NEPA, Mr. Andre Reid, to help us reach out to key informants and collect all the information available. This includes all environmental and technical reports relevant to the project implementation and this consultancy. We will continue to coordinate through him to clarify any uncertainties with data sources or values and to organize focal groups or individual interviews to advance other components of the consultancy.

6. Annexes

Annex 1. Classification and definitions from Jamaica's Land Use Cover Assessment 2013 (Global Forest Resources Assessment 2020) present in the "Integrated Management of the Yallahs/Hope River Watershed Management" project area.

Category #	Area (Km^2)	National class	Definition
1	14.3584	Closed broadleaf forest	Forest cover consisting of broadleaf trees at least 5 m tall and crowns interlocking with minimal human disturbance. This is as close to primary forest one can get.
2	26.4888	Disturbed broadleaf forest	Forest with broadleaf tress at least 5 m tall and species-indicators of disturbance such as *Cecropia peltata* (trumpet tree). This category has less than 15% disturbance.
3	10.4774	Open dry forest - tall	Open natural woodland or forest with trees at least 5 m tall and crown not in contact, in drier part of Jamaica with species indicators such as *Symphonia globulifera* (hog plum) and *Roystonea princeps* (Royal palm).
4		Open dry forest - short	Open scrubs, shrubs, bush or brushland with trees or shrubs 1-5 m tall and crowns not in contact, in drier part of Jamaica, with species-indicators such as *Prosopis juliflora* (cashew) or *Stenocereus hystrix* (Columnar cactus).
5	0.390957 Eucalyptus	Forest plantation*	Forest cover re-established by reforestation or natural regeneration consisting of hardwood species such as Mahogany & Mahoe and softwoods such as Caribbean Pine. *In project area two types of hardwood plantations are identified
	0.721573 mixed		
6	47.9093	Secondary forest	New classification identified (2013) having broadleaf forest equal or greater than 75% with disturbance levels between 10 - 25%. This level of disturbance distinguishes it from disturbed broad leaf forest.
7		Mangrove forest	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatophores with indicator species such as *Rhizophora mangle* (red mangrove).
8		Swamp forest	Edaphic forest (waterlogged soils) with a single tree story with indicator species such as *Symphonia globulifera* (hog plum) and *Roystonea princeps* (Royal palm).
9	57.398	Fields and secondary forest	>50% Fields, >25% Secondary Forest

	11.7508	Fields or secondary forest/pine plantation*	*no definition included
10	16.6147	Bamboo and secondary forest	>50% Bamboo, >25% Disturbed Broadleaf Forest
11		Bamboo	*Bambusa vulgaris* (Bamboo brakes) on the lower shale hill (disturbed forest). Not considered as a forest type. Removed in reforestation programs administered by the Agency
12	1.66725	Bamboo and fields	>50% Bamboo, >25% Fields
13		Bauxite extraction	Surface mining/bauxite
14	0.040575	Bare rock	Bare sand/rock
15	22.5119	Cultivation: (fields) herbaceous crops, fallow, cultivated vegetables	Cultivated herbaceous crops, shrub crops, fallow, legumes, or grasslands/pastures.
	10.2335	Fields and bamboo	
16		Fields: pasture, grassland*	Grasslands/pastures.
17		Herbaceous wetland	Edaphic vegetation (soil waterlogging) with herbaceous plants.
18	0.623737	Crop plantation: tree crops, shrub crops, sugar cane, banana	Tree crops, shrub crops like sugar cane, bananas, citrus and coconuts
19	20.2865	Buildings and other infrastructure	Buildings and other constructed features such as airstrips, roads, bridges etc.
20	0.282068	Quarry	
21	4.2067	Water body	

Source: Forestry Department. 2015. Jamaica's Land Use Cover Assessment – A comparative assessment of Forest Change between 1998 & 2013. Forest Resource Information Management Branch-GIS Unit.

Notes: Jamaica's Forest Resources Assessment 2020 includes the 2013 land use category definitions, which were used to generate this table.

K. Annex 11: Quantification of Outcome 3

Quantification of Outcome 3

Yallahs Hope PEU

November 27, 2020.

"Under *Outcome 3 Improved soil cover and SLM in project area"* the project achieved its greatest impact in the two WMUs through the efforts of FD, RADA, the Jamaica Fire Brigade, farmers and other landowners. The project successfully implemented land management best practices and agroforestry innovations on 512 hectares of farmlands and 52 hectares of forested areas in the WMUs (50% of the performance target)."

During the design stage of the project, 424.14 Ha of land was identfied for rehabilitation, (Figure 1). The identified areas were considered at the time to be priority areas for intervention and as such were targetted under separate initiatives during the time gap between design and launch of the project. The Proposal for Operation Development (POD) section 1.19, and the Financial Agreement (FA) section 2.08, points to reforestation efforts done through the then Forest Conservation Fund (FCF) as well as under the Climate Change Adaptation and Disaster Risk Reduction Jamaica project, as being complementary to the reforestation done under the Yallahs Hope Project. Quantification of this outcome thus needs to incroporate the areas replanted and our mainatined in fulfilment of these complementary activities. Table 1 highlights the reforestation efforts that were funded by the FCF within the area.

If soley areas above the intake are to be considered, then the initiatives of the FCF (396.66ha) and under the Climate Change Adaptation and Disater Risk Reduction Project (200ha) would amount to an additional intervention area of 596.66ha, which when added to to areas of direct intervention under the project would amount to a total of 1,161.66ha.

It should be noted that neither the POD nor the FA had any restrictions as to the location(s) within the watershed where the mentioned complemetary planting was to be conducted. With respect to the foregoing the area under sustainable land management would be 1296ha.

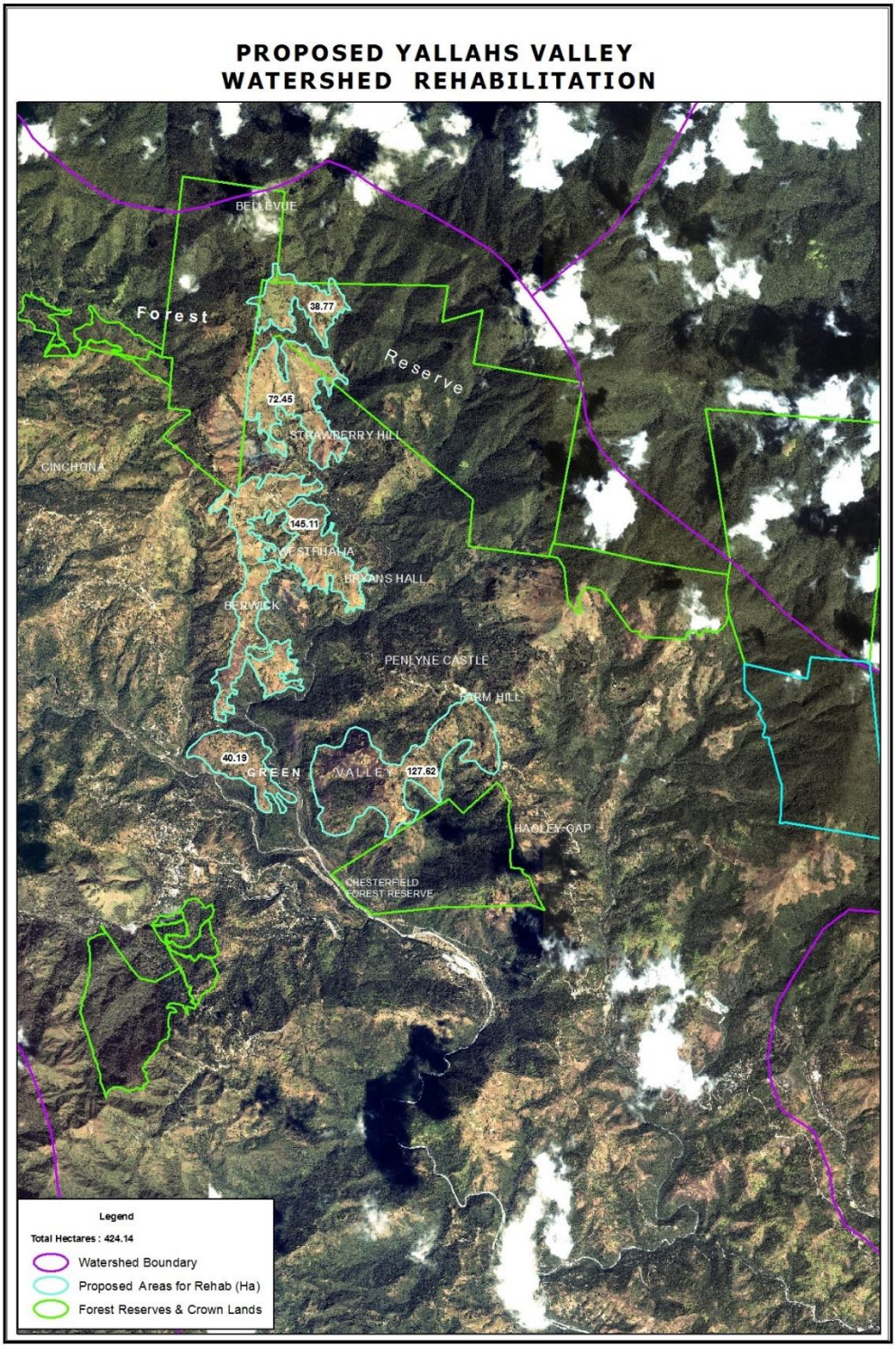


Figure 1: Plantable hectares (Martinez 2012)

Table 1: Reforestation and maintenance under FCF grants

Area of intervention	Location of Intervention	Above Intake	Approval
1.21 Ha	Dallas Castle	yes	FCF 04/09/2007
11.45 Ha	Blue and John Crow Mountains National Park (BJCMNP), Cascade, Woodford, Cedar Valley and Westphalia	yes	FCF 14/11/2011
28 Ha	BJCMNP	yes	FCF 31/08/2012
6 Ha	Exhibition Hill	yes	SCCAF 13/09/2018
40 Ha	Wallenford	yes	PL480 09/03/2007
60 Ha	Newton?	yes	FCF 05/07/2010
25 Ha	Cinchona	yes	FCF 08/11/2007
185 Ha	BJCMNP (Wallenford and Silver Hill)	yes	FCF 22/3/2017
12 Ha	Good Hope Region	no	FCF 05/07/2010
23 Ha	BJCM (foothills) http://www.fao.org/3/a-i3417e.pdf	unclear	FCF 05/07/2010
100 Ha	Yallahs Watershed	unclear	FCF 14/11/2011
40 Ha	Upper Yallahs Watershed	yes	Pl480 27/01/2006
Total in Target Watersheds	531 Ha		
Total Confirmed above Intake	396.66 Ha		

Figure 2: Communities within the Project intervention Boundaries

Results Summary Table for Indicator No. 3: Improved soil cover and land management (SLM) in project area

Outcome No. 3: Improved soil cover and land management (SLM) in project area (Hectares)

Source of Data Reported	Planned (Ha)	EOP Actual Achieved	Period of Implementation	PEU Comment (if Any) e.g. change in FD hectares to RADA Or the partner or project report that provides details. Types of species planted
FD (Y-H Project PA)	400	80.8	2015-2020	Field reconnaissance conducted during implementation showed a reduction in plantable hectares. Planting thus shifted to agroforestry based approach. Spanish Elm, Jamaican Mahogany, Bitter Damsel, West Indian Cedar, Dogwood, Wild Tamarind, South African Yacca, Prickly yellow, Blue Mahoe, Wild Tamarind, Fiddlewood, Rodwood, Pruan, Bitterwood, Milkwood, Honduran Mahogany, Santa Maria, Cornwood
RADA (Y-H Project PA)		273.66	2019-2020	mango, sour-sop, lychee, breadfruit, ackee, naseberry, avocado, Otaheite apple, coconut, banana, plantain, MD 2 pineapple, pimento, cherry, jackfruit, guava, coffee, June plum, nutmeg, pomegranate and longan
FCF	116	531	2006-2018	
PIOJ/FD	200	200	2011-2013	Caribbean Pine, Cornwood, Milkwood, Pruan, Silky Oak, Blue Mahoe, Cedar,

				Mahogany (Honduras), Mahogany (Jamaican), Bitter Damsel, Santa Maria, Spanish Elm, South African Yacca, Juniper Cedar, Soap berry, Gmelina, broadleaf, Eucalyptus, Yokewood, Cupressus, Cherry Bullet, Wild Tamarind, Milkwood, Teak, Fiddlewood
Project led Planting		210.54	2016-2019	Ackee, Avocado, Breadfruit, Citrus, Coconut, Coffee, Lychee, Mango, Nesberry, Pimento, Pineapple, Soursop, Bitter Damsel, Cedar, Blue Mahoe, Mahogony, Teak
TOTAL	Total Y-H Project Target here	1296	2006-2020	

L. Annex 12: Changing Contexts and Adjustments to Design Assumptions During the Implementation Phase

TE identified changing contexts and adjustments to design assumptions during the i*mplementation* phase that include:

1. Informally, stakeholders had worked together and had relationships to varying degrees, but coordination and cooperation among the stakeholders were often sub-optimal. To improve coordination and cooperation, efforts included (i) strengthening the Project Steering Committee (PSC)'s critical oversight function by shifting the chairmanship to a more neutral and higher level stakeholder, in the PIOJ, using negotiation to arrive at more amenable implementation strategies and having more focused meeting agendas for monitoring project progress and taking corrective action, where necessary; (ii) establishment of the TWG; (iii) inclusive working arrangements for various activities; and (iv) use of contracts for FD and RADA to carry out their responsibilities[71]. Improvements in PEU skills over time also helped to improve and foster closer working relations among partner agencies.
2. TIAs, in instances, did not have the requisite capacity to lead on specific project activities. For example, as a requirement in their respective PAs the FD for CSM assessments and WRA with sediment monitoring, both with defined timeframes. While the project did not adequately address the capacity gaps[72], adaptive actions included securing the services of the CSM consultant from design to conduct a CSM assessment at EOP while the Project Manager conducted sedimentation analysis using the Soil and Water Assessment Tool (SWAT) to determine changes to sediment budgets in the WMUs as a result of the interventions undertaken. Noteworthy, is that this was possible as a result of the training in hydrological modelling.
3. One weakness in implementation was the low levels of the PEU and TIA understanding of the inter-linkages of the different components and activities and the importance of synchronization of activity implementation, to feed from one into the other. Coupled with this was the lengthy delays experienced that reduced the opportunity for these inter-linkages to be realized, where they were identified.
4. "Flawed" hydro-met assessment at design phase required the study to be redone, and this created undue delays that affected multiple activities, delaying project implementation significantly. This issue created major project setbacks, especially since a number of activities were dependent on its output.

[71] Not adaptive strategy as this was the original plan for engaging the two partners for Component 3 implementation (POD 2013; FA 2014)

[72] FD received some online training in CSM but not enough to carry out the assessments; the original hydromet study identified the capacity requirements for WRA for turbidity meters for the priority areas, including budget, and while the activity was also defined in the NEPA-WRA PA no turbidity meters were purchased by the project nor aany assessments done.

5. Absence of a *pre-implementation planning phase*, during which time activities were to be completed, including: development of silvicultural plans for FD's activities and the negotiation for Partnership Agreements (PAs). Other important steps would have been given attention to allow for readiness at start-up, including procurement preparation activities and development of the project's participatory M&E plan.
6. Absence of market analysis at design and start up contributed to the hiccups with the hiring of consultants for activities such as Ecological assessment (Component 1), GIS-DSS (Component 1), and PES design and implementation (Component 2). Underbudgeting of these three activities required transfer of funds across line items and supplementing the budget with an IDB Biodiversity Fund Technical Cooperation (TC) of US$ 300 000, respectively.
7. Significant project delays did not allow for the full cycle of PES (to implementation, to thoroughly pilot and test the concept) and to achieve the outputs expected after five years.
8. M&E processes were weak and accounted for inadequacies in RF reporting and these did not improve even post mid-term.
9. Re-scoping and adjustments post mid-term allowed for:
    a. Contracts to replace arrangements in PAs for RADA and FD to accelerate reforestation and agro-forestry activities. This adjustment was also advantageous in reducing the protracted time for procurements that had previously caused significant delays. It is not clear why contracts were not utilized from the outset as it was clearly stated in the POD (2013) and FA (2014).
    b. Infusing the project requirements into the NEPA's corporate/strategic business and operational planning process, including direct supervision under the Planning, Projects, Monitoring, Evaluation and Research Division (PPMERD) and its Projects Branch and reallocation of NEPA staff to fill project management and technical coordination gaps.
    c. Establishing a TWG that provided some levels of technical oversight for the project, in particular, allowed for closer monitoring of consultants' contracts, deliverables and quality of work.
    d. Improvements in NEPA's technical support in specific activities, but ownership of outputs remain vague.

M. Annex 13: Analysis of the PEU's capabilities to carry out its duties and responsibilities

Detailed TE analysis of the PEU's capacity to carry out its responsibilities as defined in the POM

Required PEU Skills (*as stated in* POM 2018)	PEU Status that promoted efficiency	Gaps/Challenges
General coordination, planning and monitoring	a. Coordination evident through PSC, TWG and stakeholders involved in consultancies. Communication Consultant facilitated coordination of project and non-project communication activities to the extent that resources and mechanisms allowed. b. Adaptive management strategies employed by the PEU to fill gaps in data sets for impact monitoring during final quarter of project. c. Planning function undertaken by PEU	a. Absence of a project stakeholder analysis and activity stakeholder analysis early and over the LOP to ensure participation of relevant stakeholders in activities (e.g. more active engagement of OUR; GEF Focal Point; MEGJC Water Policy Monitoring Unit; the Cabinet, a slate of related Component 3 stakeholders[73]). b. The use of Single Source Selection with contracts for implementation of Component 3 activities by FD and RADA was defined in the PA (2014) in Section 3.03c. This was not utilized until late 2018 after much delays and challenges associated with use of NEPA's procurement process. c. Limited familiarity with the POD (2013) and FA (2014) and especially evident in stipulations for Component 3 implementation and M&E arrangements. d. Weak M&E capacity, that limited M&E plan implementation within the PEU and the project's TIAs.
	e. Planning: IPs submit plans, PEU develops AOPs and shares through presentations in PSC meetings. PEU prepares procurement, finance Plans and staff work plans	a. Participatory planning with TIAs was limited and inadequate opportunities created for joint implementation. b. Planning and management associated with project activities was not carried out in a logical sequence, signalling lack of clarity on the project's intervention logic. This resulted in activities being implemented piece meal and not adequately linked, also signalling project management deficiencies. c. Absence of joint annual face-to-face project review and planning for development of AOPs and supporting documents but this improved post mid-term with improved communication between PEU and TIAs, for example regular PEU planning meetings d. Inadequate but improving working relationship between PEU and NEPA units, that although there was participation in activities, ownership is questionable. e. Consultancy TORs not always well developed (e.g. GIS DSS TOR did not make a link with the WAMM outputs and did not include a task for development of data protocols and were often not informed by the design documents, some of which included specific guidance for scope of work for relevant consultancies. Failed to make the link with design documents- not referenced in the TORs. f. Sequencing of activities limited and did not account for predecessor and successor activities creating a disconnect between the outputs, also not in keeping with the intervention logic

[73] CIB, TPDCo, SDC, JCDT, JBDC, NIC, MICAF

Required PEU Skills (*as stated in* POM 2018)	PEU Status that promoted efficiency	Gaps/Challenges
	g. Monitoring: IP submission of quarterly reports vary, mainly due to capacity. PEU has responsibility for monitoring and evaluation. PEU tracks implementation and prepare monthly, semi-annually and PSC meeting presentations	a. Monitoring: Inadequate monitoring and communication regarding partnership agreements but improved post-midterm; Inadequate monitoring of PEU Staff performance; missed opportunity to actively involve TIAs in project M&E, using the defined M&E plan, and to support PES monitoring after project closeout.
Defining and establishing the inter-institutional coordination mechanisms with other public and private organizations related and/or beneficiaries of the project.	Stakeholders have been identified and are participating to various degrees. The mechanisms used include the PSC, the ALAF Working Group, TWG. The TWG is a good practice that once operational, aided in the improvement of quality of products from consultants. PSC improved significantly over time with a neutral chair, PIOJ, and being more focused and targeted in its deliberations. PSC Chair instrumental in negotiations and improved efficiency. PSC better structured to allow for greater participation of its membership in deliberations. Another example is the train-the-trainers FFS for government and NGOs that involved multiple stakeholders.	The institutional structure initially was not adequately operationalized, with inter and intra-institutional communication gaps. This improved over time. PSC not established as designed, with high-level strategic decision-making. The ALAF working group has been discontinued, though considered an effective mechanism. Private sector involvement was not evident throughout the LOP. NGO involvement was less than desirable (e.g. the role of the JCDT was to more involved than realized). MOU not established as an inter-institutional mechanism but was individualized through separate PAs between NEPA and each key partner agency. PEU output focused project progress reporting to the PSC
Support the implementation of public awareness campaigns and contribute to ensuring stakeholder participation.	The Communications Consultant hired in July 2016 developed a detailed communications plan that is revised periodically. Implementation of the plan focuses on using a range of tools and media for building public awareness and stakeholder participation. Efforts have been made to involve stakeholders in activities. Meetings were held with TIAs, the PSC to provide updates on implementation status, plan for upcoming activities, and to provide an avenue for decision-making.	Inconsistent Communications Personnel capacity within the PEU, with late hiring and high turnover. There was a missed opportunity to work with communications and public relations units within each partner agency, to increase the resource base for the activities. This was also another missed opportunity for coordination and integrated. PES sensitization and awareness has been delayed and leaves a gap to be filled, post-project, if the initiative is sustained. There were missed opportunities to conduct these activities while the WTP study was being undertaken. Since the focus of the PES would have initially been on the KMA residents, a missed opportunity for reaching this target group was via their water bills. Absence of ongoing sensitization of key stakeholders on project objective and logic as well as coordinated strategic planning.

Required PEU Skills (*as stated in* POM 2018)	PEU Status that promoted efficiency	Gaps/Challenges
In close coordination with technical and administrative staff of NEPA, undertaking the strategic and operations planning activities, including the development of the Annual Operations Plan (AOP), the Procurement Plan (PP), the Financial Plan (FP), and other pertinent documentation, in compliance with the requirements of MWLECC, the Ministry of Finance and Planning (MOFP) and the Inter-American Development Bank (IDB).	All plans developed in a timely manner. Reporting by the PEU is excellent, given the multiple reporting requirements. Reports are shared with PIOJ's External Cooperation Management Division; MoFPS Project Officer within Debt Management Division. The Project's Finance and Administrative Officer also prepares a monthly financial report for the MoFPS. NEPA also sends financial reports to the MEGJC on a monthly basis through the Finance and Accounts Branch. The project annual reporting is included in NEPA reports to MEGJC and Cabinet. IDB reporting done as required (semestral and annual) and are used to prepare IDB's PMR and PIR for GEF.	Involvement of NEPA technical and administrative staff in planning and operations varied. EMCD not directly involved in project planning but project activities are included in their processes and plans. Procurement Office gets PP when completed and not always up to date. Support in gap areas within the PEU such as Project Management and M&E was limited. Top-down planning and reporting processes not good for coordinated approach.
Monitoring the activities of the Project in compliance with its strategic objectives and those of its individual components, as well as the targets established in the AOP.	Tracking done for production of PSC updates and semestral and annual reports. Monitored against project targets. Quarterly and annual reporting templates provided to the IPs to monitor implementation.	Inadequate project performance monitoring against the RF. Discrepancy in use of PM4R and IDB's PMR (PEU not using the updated RF). . TIA reporting inconsistent especially for co-financing. Inadequate follow-up from PEU, but improved post mid-term. The M&E role of the PEU was not adequately developed, with no evidence of an implementation plan associated with the project's M&E Plan. Baselines associated with various indicators were not established at the start as specified and this affected M&E implementation and reporting. The KAPB, CSM and sediment loading results were important to project M&E and absence of their baselines and mid-term data compromises the M&E utility and adaptive management functions. EOP assessments are being conducted at the time of the TE but gaps in pre-implementation and mid-way data will compromise the utility of the results and the learning envisioned at design.
Preparing the periodic physical and financial progress reports to be submitted to the MWLECC, MOFP, the Project Steering Committee (PSC), and the Bank.	Timely submission of SAR/semestral reports to IDB; monthly reports to NEPA; Project reports were submitted to the MEGJC on a quarterly basis through NEPA's regular reporting system and financial reports are submitted monthly to the MoFPS. Project has covered and exceeded its commitment for co-financing based on report sent to the Auditor General in July 2020.	Low levels of communication on the reports done by TIAs (other than submission via email) and on delinquency with reporting, which renders project reporting incomplete (e.g. co-financing). PSC reporting via PowerPoint presentation, physical documents not tabled (e.g. SARs; AOPs). No reporting done to Cabinet as specified in TOR for the PSC but NEPA's annual report sent to Cabinet includes the Y-H Project. PEU uses reports from TIAs to develop larger reports.

Required PEU Skills (*as stated in* POM 2018)	PEU Status that promoted efficiency	Gaps/Challenges
Present to the Bank the required information, reports and documentation of the Project as a whole and its individual components, as established in the Technical Cooperation Contract.	The submission of NO requests were ongoing as required and the PEU generally responded to queries and requests by the IDB for additional information.	Criteria for selection of farmers for demonstration plots; report of farmers selection included the criteria met and documents submitted e.g. security of tenure for up to five years to secure ROI; Farm plans for the demonstration plots that should have been submitted to IDB for NO prior to implementation of the FFS, were not developed. NOs generally granted in a short time, except for when additional information is requested.

N. Annex 14: GEF-funded projects by design elements

SLM Projects

ID	Title	Focal Areas	Total[74] (000's)	Country
5231	Integrating Climate Change into Environment and Sustainable Land Management Practices (ICE-SLM)	**Climate Change**	**$11,976**	**Angola**
10179	Mainstreaming Sustainable Land Management (SLM) for Large-Scale Impact in the Grazing Lands of Limpopo and Northern Cape provinces in South Africa	**Land Degradation**	**$148,744**	**South Africa**
9759	Promoting Sustainable Land Management (SLM) Through Strengthening Legal and Institutional Framework, Capacity Building and Restoration of Most Vulnerable Mountain Landscapes	**Land Degradation**	**$33,726**	**North Macedonia**
4751	Mainstreaming SLM in Rangeland Areas of Ngamiland District Productive Landscapes for Improved livelihoods	**Land Degradation**	**$31,681**	**Botswana**
5327	Securing Multiple Ecosystems Benefit Through SLM in the Productive But Degraded Landscapes of South Africa	**Land Degradation**	**$44,760**	**South Africa**
4751	Mainstreaming SLM in Rangeland Areas of Ngamiland District Productive Landscapes for Improved livelihoods	**Land Degradation**	**$31,681**	**Botswana**
3356	CPP Namibia: Sustainable Land Management Support and Adaptive Management Project (NAM SLM SAM)	**Land Degradation**	**$41,350**	**Namibia**
9759	Promoting Sustainable Land Management (SLM) Through Strengthening Legal and Institutional Framework, Capacity Building and Restoration of Most Vulnerable Mountain Landscapes	**Land Degradation**	**$33,726**	**North Macedonia**

[74] **(Grant+ Cofinancing)**

Biodiversity Projects

ID	Title	Focal Areas	Total[75]	Country
5096	Payment for Watershed Services in the Chishui River Basin for the Conservation of Globally Significant Biodiversity	Biodiversity	$17,909	China
3816	Mainstreaming the Conservation of Ecosystem Services and Biodiversity at the Micro-watershed Scale in Chiapas	Biodiversity	$7,386	Mexico
3761	CBSP: Sustainable Management of the Mbe River Forested Watershed through the Development of a Payments for Ecosystem Services (PES) Mechanism	Biodiversity	$2,839	Gabon
3279	Citarum Watershed Management and Biodiversity Conservation Project	Biodiversity	$29,975	Indonesia
2765	Espirito Santo Biodiversity and Watershed Conservation and Restoration Project	Biodiversity	$12,000	Brazil
2068	Integrating Protected Area and Landscape Management in the Golden Stream Watershed	Biodiversity	$975	Belize
1943	Integrating Watershed and Biodiversity Management in Chu Yang Sin National Parkv	Biodiversity	$973	Viet Nam
1929	Participatory Community-based Conservation in the Anjozorobe Forest Corridor	Biodiversity	$975	Madagascar
1830	Protected Areas Management and Sustainable Use (PAMSU)	Biodiversity	$38,000	Uganda
1642	Formoso River -- Integrated Watershed Management and Protection	Biodiversity	$2,152	Brazil
942	Local Empowerment and Environmental Management Project - Micro Watershed and Environmental Management Project	Biodiversity	$90,980	Nigeria
4907	GGW: Nigeria Erosion and Watershed Management Project (NEWMAP)	Biodiversity, Climate Change, Land Degradation	$508,593	Nigeria
10371	Biodiversity Conservation, Restoration and Integrated Sustainable Development of Lower Mangoky and South-Mananara watersheds	Biodiversity, Land Degradation	$40,139	Madagascar
10369	Strengthening the Conservation of Biodiversity and Sustainable Management of Forest Landscapes in Turkey's Kazdağlari Region	Biodiversity, Land Degradation	$29,658	Turkey

[75] **(Grant+ Cofinancing)**

PES Projects

ID	Title	Focal Areas	Total[76] (000's)	Country
10213	Economic instruments and tools to support the conservation of biodiversity, the payment of ecosystem services and sustainable development	Biodiversity	**$13,800**	Chile
10213	Economic instruments and tools to support the conservation of biodiversity, the payment of ecosystem services and sustainable development	Biodiversity	**$13,800**	Chile
5668	Innovative Use of a Voluntary Payment for Environmental Services Scheme to Avoid and Reduce GHG Emissions and Enhance Carbon Stocks in the Highly Threatened Dry Chaco Forest Complex in Western Paraguay	Climate Change	**$4,319**	Paraguay
5516	Payment for Ecosystem Services to Support Forest Conservation and Sustainable Livelihoods	Climate Change, Biodiversity	**$41,238**	Mozambique
5096	Payment for Watershed Services in the Chishui River Basin for the Conservation of Globally Significant Biodiversity	Biodiversity	**$17,909**	China
3761	CBSP: Sustainable Management of the Mbe River Forested Watershed through the Development of a Payments for Ecosystem Services (PES) Mechanism	Biodiversity	**$2,839**	Gabon
3682	Developing an Experimental Methodology for Testing the Effectiveness of Payments for Ecosystem Services to Enhance Conservation in Productive Landscapes in Uganda	Biodiversity	**$2,102**	Uganda
2806	Promoting Payments for Environmental Services (PES) and Related Sustainable Financing Schemes in the Danube Basin	Biodiversity	**$2,314**	Regional, Bulgaria, Romania
2589	Institutionalizing Payments for Ecosystem Services	Biodiversity	**$16,949**	Global
10213	Economic instruments and tools to support the conservation of biodiversity, the payment of ecosystem services and sustainable development	Biodiversity	**$13,800**	Chile

[76] **(Grant+ Co-financing)**

O. Annex 15: Ex-post Cost Benefit Analysis

a. Macro-level policy enhancement benefits

EOP benefits by Components

BENEFIT		
Investment Category	**Outcomes**	**Benefit derived at end of project**
Component 1 - Institutional Strengthening & Capacity Building for Biodiversity		
1.1 Watershed Management MOU approved	Improved management of biodiversity in the watersheds of the Hope & Yallahs Rivers & the Blue and John Crow Mountains	Improved Capacity to Manage Watershed ecosystem and services
	Watershed management policies reviewed, updated, and improved to integrate biodiversity and conservation of ecosystem services	Watershed management policies reviewed, updated, and improved to integrate biodiversity and conservation of ecosystem services
1.2 Socio-physical data gathered	Output 1.2: Monitoring protocols created and implemented	Monitoring protocols created and implemented
1.3 Monitoring protocols implemented -	GIS-based decisions support system (DSS) for both watersheds created, configured and implemented	GIS-based decisions support system (DSS) for both watersheds created, configured and implemented
1.4 GIS-based decisions support system (DSS) for both watershed implemented configured and implemented	Output 1.4: Training of Government & NGO staff in IWRM and biodiversity information management	Training of Government & NGO staff in IWRM and biodiversity information management
Training of Government & NGO staff in IWRM and biodiversity information management		
1.5 Stakeholders of two WMUs trained in IWRM and biodiversity information management		
1.6 Communication plan and public awareness campaign implemented	Communication plan and public awareness campaign implemented	Awareness: exposure to the public to announcements highlighting the environmental issues within the watersheds improved awareness and possibly attitudes
Component 2 - Design of a market-based incentive scheme		
2.1 Ecological services valued	Valuation of hydrological benefits	Valuation of hydrological benefits Estimate of funds available for conservation within the watersheds
2.2 Payment for Environmental Services (PES) scheme designed	Design of PES scheme	Design of PES scheme
Component 3 - Sustainable livelihoods, agriculture and forestry in watershed Communities		
3.1 Extension programmes monitored	Extension Programme Designed	Extension Programme Designed
3.2 Community capacity improved	Capacity Development for Communities	Capacity Development for Communities. Such as: Number of farmers & LFMC members trained in Better Land Husbandry; community groups formed & strengthened; people trained in operation of Guest Houses, Eco-lodges & Community ICT Centres; people trained in fire management
3.3 Agriculture practices improved	Implementation of farming and land management practices	Implementation of farming and land management practices

Macro Benefit Estimates

Consolidated Financial - EOP 2020			Benefiting Stakeholder								
WBS Code	**Investment Category**		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Benefit**
		ACTUAL Cost									
1	**Component 1 - Institutional Strengthening & Capacity Building for Biodiversity**	**$ 1,330,000.83**									$ 4,876,643.03
1.1	1.1 Watershed Management MOU approved	$ 31,505.72	1	1	1	1					$ 126,022.90
1.2	1.2 Socio-physical data gathered	$ 581,951.43	1		1	1			1	1	$ 2,909,757.15
1.3	1.3 Monitoring protocols implemented -	$ 360,194.62	1	1	1	1					$ 1,440,778.48
1.4	1.4 GIS-based decisions support system (DSS) for both watersheds implemented configured and implemented Training of Government & NGO staff in IWRM and biodiversity information management	$ 86,084.90	1		1			1			$ 258,254.69
1.5	1.5 Stakeholders of two WMUs trained in IWRM and biodiversity information management	$ 128,434.36									
1.6	1.6 Communication plan and public awareness campaign implemented	$ 141,829.80									$ 141,829.80
2	**Component 2 - Design of a market-based incentive scheme**	**$ 2,944,904.94**									$ 7,917,495.29
2.1	2.1 Ecological services valued	$ 1,528,699.20	1	1	1				1		$ 3,668,878.09
2.2	2.2 Payment for Environmental Services (PES) scheme designed	$ 1,416,205.73	1		1	1	1		1		$ 4,248,617.2
3	**Component 3 - Sustainable livelihoods, agriculture and forestry in watershed Communities**	**$ 8,147,775.00**									$ 8,147,775.00
3.1	3.1 Extension program monitored	$ 76,289.55							1		$ 76,289.55
3.2	3.2 Community capacity improved	$ 1,402,144.92							1		$ 1,402,144.92
3.3	3.3 Agriculture practices improved	$ 6,047,711.17							1		$ 6,047,711.17
3.4	3.3 Area replanted through forestry and agroforestry	$ 621,629.37							1		$ 621,629.37
5	Program Management	621,629.37									
	Grand Direct Total	**$ 13,044,310**									**$ 20,022,615.68**
											1,374,193.00
											$ 20,941,913.32
Total Cost		**$ 13,044,310.14**									

b. Micro Level Assumptions

O.1.1 Farm detail

Basic Farm Model

Product	Measure Units /acre	Yield/Acre	%of Area	Unit Price (J$)	Number of crops per year	Sales/yr.
Coffee	**Box/acre**	45.00	0.5	$ 4,000	1	90,000.00
Banana/plantain productivity(bunches/acre)	**Bunches**	50		$ 1,235	1	30,875.00
Escallion	**Lbs.**	8500	0.1	63	2	107,100.00
Gungo Peas	**Lbs.**	2850	0.1	218	1	62,130.00
Carrot	**lbs.**	9240	0.2	88	1	162,624.00
pineapple	**lbs.**	7,692	0.1	150	1	115,380.00
Total Revenue						**568,109.00**
Labour Cost		**Cost**	**%of Area**		**Adjusted cost**	
Coffee (0.5 acre) + Banana/plantain (0.25 acre) productivity(bunches/acre)		152000	0.5		76,000.00	
	Escallion	184000	0.1		18,400.00	
	Gungo Peas	166000	0.1		16,600.00	
	Carrot	124000	0.2		24,800.00	
	pineapple	124000	0.1		12,400.00	
Total Labour Cost						**148,200.00**
Input Cost						
Coffee (0.5 acre) + Banana/plantain (0.25 acre) productivity(bunches/acre)		127250	0.5		63,625.00	
	Escallion	79440	0.1		7,944.00	
	Gungo peas	27400	0.1		2,740.00	
	Carrot	39600	0.2		7,920.00	
	Pineapple	197900	0.1		19,790.00	
Total input Cost						**102,019.00**
Profit						**317,890.00**

Farm and Sales price

Crop	ITEMS INCOMES	
Coffee & Banana	**Coffee productivity (box/acre)**	**45**
	Coffee price/ box	**4000**
	Percentage productivity year 2	0.5
	% Area extension for scallion production	0.5
	Percentage productivity year 3	0.75
	Banana/plantain productivity(bunches/acre)	**50**
	Banana/plantain incomes per bunch	**1235**
	% Area extension for Banana/plantain system production	**0.5**
	Coffee Productive cycles in a year	**1**
Escallion	**Escallion productivity (lb/acre)**	**8500**
	Escallion incomes/ pound	**63**
	% Area extension for scallion production	**0.1**
	Escallion Productive cycles in a year	**2**
Gungo Peas	**Gungo peas productivity (lb/acre)**	**2850**
	Gungo peas incomes/pound	**218**
	% Area extension for gungo peas production	**0.1**
	Gungo peas Productive cycles in a year	**1**
Carot	**Carrot productivity (lb/acre)**	**9240**
	Carrot incomes / pound	**88**
	% Area extension for carrot production	**0.2**
	Carrot Productive cycles in a year	**1**
Pineapple	**Pine apple productivity (lb/acre)**	**7,692**
	Pineapple incomes/pound	**13**
	% Area extension for Pine apple production	**0.1**
	Pineapple Productive cycles in a year	**1**
	Extension districts	**1**

Revenue

Revenue Assumption

Product	Measure Units /acre	Yield/Acre	%of Area	Unit Price (J$)	Number of crops per year	Sales/yr
Coffee	Box/acre	45.00	0.5	$ 4,000	1	90,000.00
Banana/plantain productivity(bunches/acre)	Bunches	50	0.25	$ 1,235	1	15,437.50
Escallion	Lbs	8500	0.1	63	2	107,100.00
Gungo Peas	Lbs	2850	0.05	218	1	31,065.00
Carrot	lbs	9240	0.05	88	1	40,656.00
Pineapple	lbs	7,692	0.05	150	1	57,690.00
Total			**1**			**341,948.50**

Cost of Production

Cost of Production

Cost of production	Escallion	Gungo Peas	Carrot	Pineapple	Coffee+ Banana
Labour	184,000	166,000	124,000	124,000	152,000
Inputs	79,440	27,400	39,600	197,900	127,500
Transportation (10% materials)	7,944	27,400	3,960	19,790	50,000
Contingencies (10% labour and materials)	18,400	16,600	12,400	12,400	15,200
Subtotal	**289,784**	**237,400**	**179,960**	**354,090**	**344,700**

SLM Establishment Cost

SLM Establishment Cost											
Method	length / area	Unit of Measure	Plant density/ # of structures	Materials	Qty	Measure Units	Unit Cost (J$)	Total input Cost	Man Day Work	Labour Cost Establishment	Total Establishment Cost
Pineapple Barriers	100	ft	50	Suckers	50	unit	60	3000	0.25	500	4000
				Fertilizers	1	bag	500	500			
Grass Barriers	30	ft	70	suckers	70	unit	50	3500	0.25	500	4500
				Fertilizers	1	bag	500	500			
Organic Trash Barriers	30	ft	1	sticks/bambo/ trash				0	0.25	500	500
Stone Barriers	30	ft	1	Stone				0	1.5	3000	7000
				Transportation				4000			
Bench Terraces	0.5	acre	5	Zinc				0	2	4000	4000
				Tools (e.g shovel)				0			
Individual basin	1	acre	50	------	50	unit	100	5000	0	0	5000
				hoe/shovel				0			
Gully Phigs/Check Dams	1	m	3	Tires/Bambo/Stones				500	1	2000	6500
				Transportation				4000			
Waterways	20	ft	1	Cement /stones				0	1.5	3000	7000
				Transport				4000			
Live Fences	1	1	100	timber trees	100	unit	20	2000	2	4000	11700
				Barbed wire (roll)	1	unit	5000	5000			
				Staples				500			
				Nails				200			
Coffee Under Shade	1	acre	25	Plantain Sucker	20	unit	50	1000	1	2000	3100
				timber trees	5	unit	20	100			
Total											53,300

P. Annex 16: Assessment of Project Risks prior to start-up and during the final year of Implementation

Terminal Evaluation (TE) review of project documents revealed that risk assessment was routinely conducted, from design into implementation.

- The risks outlined in the 2014 Risk Mitigation Plan (RMP) were tracked up to December 2017. The Semi-Annual Progress Reports (up to December 2017) reveal a worsening risk profile of the project. Additionally, risk assessment efforts were documented in monthly "Risk Assessment Matrix" documents prepared by the PEU. These documents sometimes identified risks not included in the 2014 RMP.
- Risk assessment continued post mid-term, and in 2019 and 2020, a RMP was included as part of the AOP. Monthly risk assessment also continued, however these efforts in the latter years of the project did not track all the risks outlined in the 2014 RMP and did not have a strong impact on risks which could impact sustainability.
- Given the integrated and interconnected nature of the Y-H Project Components and activities, unsuccessful mitigation actions relating to one Component or activity would negatively impact several outcomes and outputs.
- It was noted that Project implementation did not effectively build on the foundation laid during the design phase and this resulted in several risks and issues during implementation. This, in addition to the Y-H project's inadequate risk mitigation efforts and the absence of an agreed and financed sustainability plan means that many of the risks identified during design and implementation will continue post project.

Comments on the 2014 Risk Management Plan

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions	Responsible	Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity			
1	Development	Low rate of adoption of proposed technologies by	2	Medium	1.1 As part of Project preparation, careful consideration has been provided to the selection of specific crops and agroforestry species, along with SLM practices that can be effectively applied and sustained by farmers, while translating into incremental income generating potential.	IDB, GOJ	**Although significant work was done during design, which was expected to mitigate the project risks, implementation did not effectively build on the foundation laid.**	

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions		Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity	Responsible		
		farmers			1.2 Extensive consultation with the GOJ Agencies was done during Project preparation in order to ensure adequate participation in project implementation. In addition, "Knowledge, Attitude, Practices" (KAP) studies will be undertaken during the first year of Project implementation to ensure commitment in/to the adoption of sustainable agriculture and land conservation practices that are acceptable to local stakeholders to improve the livelihoods of such communities.	IDB, GOJ	**Unsuccessful mitigation actions were on account of the following:** (i) Several design assumptions did not hold true. (ii) Implementation was not always in accordance with design (e.g., *KAPB Study was not undertaken in the first year and this was needed to have informed any additional intervention strategies needed to foster adoption and buy-in) and this limited the efficacy of the risk mitigation action.*	This remains a risk to sustainability, particularly since the PES was not piloted during the project and an agreed and financed sustainability plan is not in place as at September 2020
					1.3 The Program comprises specific and permanent extension services which will, among others, provide the necessary technical support at the local level, while ensuring active community involvement and demonstrative activities.	RADA, FD		
1	Development	Lower than expected impacts of Project's actions to have a measurable effect	1	Low	1.4 As part of project preparation, baseline data was collected and models run on various aspects related to waterfowls, sediment levels, soil conditions, precipitation and other.	IDB, GOJ	**While mitigation actions were carried out at design, project implementation did not build on this work, and as such, the effect of the mitigation actions were significantly reduced.** **Unsuccessful mitigation of the risk was on account of the following:** (iii) Several design assumptions did not hold true. (iv) M&E implementation had several deficiencies, and did not sufficiently build off the M&E plan provided at entry	Partner capacity was not built during implementation to undertake M&E, and as such, the risk is still applicable.
					1.5 GIS-based decision support systems will complement the efforts made in data collection, while enhancing the capabilities for measurement and monitoring of the impact of Project interventions in the watersheds.	NEPA		
					1.6 During Project Design, consultants identified data gaps and recommended monitoring plans/activities needed effectively measure Project impacts. These will be implemented at the Agency level.	IDB		
1	Development	Lack of buy-in by the NWC of the	2	Medium	1.7 The Project will provide the means to attain an effective inter-agency collaboration during both, project preparation and implementation and, in particular, in the implementation of the			

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions	Responsible	Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity			
		results arising from the PES			GIS-based decision support systems, as well as the strengthening of data collection and monitoring capabilities in NEPA and WRA, among others, to guide the investment activities and provide the necessary inputs for the establishment and operation of the PES framework.	NEPA, WRA, NWC	The project was able to successfully engage NWC, however key PES activities were not implemented close to project closure (September 2020) or not implemented at all	Buy-in of stakeholders is still a sustainability issue, especially as actions are taken towards pilot and full PES implementation
					1.8 The design and implementation of the PES system will be based on an in-depth socioeconomic assessment of the potential scope of the ecosystem services and their corresponding cash flow generating potential; framework to be provided to NWC.	NEPA, WRA, NWC		
					1.9 Localized pilot PES will be initially implemented as the basis for full execution and taking into account technical, administrative and willingness to pay aspects, among others,	NEPA, WRA, NWC		
1	Development	Delays in Project implementation	**2**	**Medium**	1.10 The Project execution mechanism has been designed based on the in-depth institutional analysis conducted of NEPA during Project preparation, and takes into consideration the administrative capabilities and experience of other agencies with respect to, among others, financial and procurement administration.	IDB, GOJ	This risk remained LOP and in fact, went on to become a major issue throughout implementation. Follow-on risk response actions were not very effective. Reasons for this include: • Absence of triggers that would lead to remedial action • Inadequate stakeholder understanding of intervention logic and proper sequencing of activities • Several procurement delays • FD and RADA were not contracted using SSS method for Component activities	Yes. This remains a risk to sustainability as follow-on actions will be impacted by coordination challenges and capacity gaps
					1.11 A solid mapping of the various agencies of the GOJ with responsibilities in watershed management has been developed and, based on that, the Results Framework of the Program effectively assigns to these agencies the individual and joint responsibilities of each of the three components and corresponding outcomes and outputs. This will provide for accountability and should thereby contribute to meeting Project targets, outputs and deadlines at the individual agency and consolidated levels. The Results Framework of the Program will be signed off by all participating agencies before approval.	IDB, GOJ		
					1.12 The GOJ will establish a Program Steering Committee (PSC) which will provide the governance framework for the Project, will support NEPA throughout the execution of the Program, and will	IDB, GOJ		

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions		Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity	Responsible		
					provide for the active participation of each of the GOJ agencies with mandate in watershed management.			
					1.13 The procurement capacity and experience was assessed for each agency during Project preparation. The expertise identified will be deployed by the agencies to contribute to Project implementation. In the case of NEPA, a Procurement Specialist has been recommended to be contracted with Project resources to support the execution and coordination responsibilities in this area.	IDB, GOJ		
2	Governance	GOJ agencies not working together as anticipated	1	Low	2.1 NEPA, as Program implementing agency will have the overall leadership in Project execution as well as the coordinating responsibilities for the various actors. For this purpose, the Project will provide financial resources to contract the services of a Program Coordinator and other support staff who will directly support NEPA in this functions throughout the execution period.	NEPA	The project resulted in improved inter-agency collaboration. However the partnership arrangement among agencies was not implemented as specified in the Financing Agreement. Additionally, TE consultations revealed the need for increased collaboration among the GOJ agencies	This risk is likely post implementation, but harnessing the strengths and lessons from Y-H Project should help to mitigate this risk.
					2.2 Financial resources will be allocated to each agency based on the Results Framework of the Program, and taking into consideration the interdependency among Project's components, outcomes and outputs.	NEPA, WRA, RADA, FD, other		
					2.3 The presence of overall personnel stability at the management, administrative and technical levels in the GOJ agencies participating in Project implementation will contribute to the overall coherence of objectives, goals and activities throughout the Project implementation period. The sign off by all agencies by the GOJ agencies will be formalized with memoranda of understanding MOU with NEPA as a condition prior to the first disbursement.	NEPA, WRA, RADA, FD, other		
2	Governance	Changes in Government administration	1	Low	2.3 Project design has ensured a participatory approach from all GOJ agencies with mandate in watershed management, as well as taking into consideration the overall long-term development and policy framework of the GOJ, included in, among others, "Vision 2030 Jamaica - National Development Plan".	NEPA, WRA, RADA, FD, other	There is no evidence this risk materialized during implementation.	

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions	Responsible	Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity			
					2.4 From a long term political perspective, the conformation of the Program Steering Committee will contribute to a broad institutional commitment to the initiative, as per the original goals, and regardless of structural changes in the GOJ.	NEPA, WRA, RADA, FD, other		Risk is currently not expected to affect future operations, but should be monitored.
3	Macroeconomic	Reduced fiscal space during Project execution	2	Medium	3.1 Confirmation by the GOJ through the Planning Institute of Jamaica (PIOJ) of the priority granted to the Project.	MWLECC, RADA and MF&P	This risk became an issue during implementation. The PIOJ, MOFPS (formerly MF&P) and NEPA were instrumental in resolving the issue.	Risk remains relevant for post project interventions.
					3.2 NEPA, through the MWLE&CC will ensure that during the five-year Project implementation period, the appropriate amount of budgetary resources for Capital B "estimates of expenditure" are timely and effectively introduced in the fiscal budget and approved by the MF&P.	MWLECC, RADA and MF&P		
					3.3 The MF&P will correspondingly confirm the existence of the necessary fiscal space for the execution of this priority non reimbursable technical cooperation.	MWLECC, RADA and MF&P		
4	Environmental and Social	High risk of extreme weather in the Island of Jamaica	3	High			This risk did not become a major issue for the project during implementation.	Risk is very relevant post project and should be tracked and mitigated, in support of sustainability
5	Sustainability	Changes in prices of agricultural commodities	3	High	5.1 As part of Project preparation activities, a solid set of agricultural crops and agroforestry species was selected for the initiative, taking into consideration environmental aspects as well as cultural and financial aspects with respect to past experience of the farmers and cash generating potential, respectively. In addition the KAP studies should provide valuable inputs with respect to farmers' knowledge and attitudes with respect to specific crops, their sustainability, and overall stakeholder interest and commitment over the medium and long term.	IDB, GOJ	This risk did not become a major issue for the project.	

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions	Responsible	Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity			
					5.2 The promotion of SLM practices by the Project will contain a large scope of extension activities aimed at raising awareness on medium and long-term benefits and cost savings for the farmers from the adoption of soil conservation and sustainable agricultural practices. The present value of such benefits can outweigh any fluctuations in prices of agricultural commodities.	RADA, FD, NEPA		Risk remains relevant post project and should be planned for, accordingly.
					5.3 Overall gains in productivity at the farm level from the adoption of SLM practices, complemented by extensive community sensitization, training and extension should create the necessary awareness on the benefits of the Project which can outweigh short term risks associated to price fluctuations for the selected agricultural and agroforestry commodities.	RADA, FD, NEPA		
5	Sustainability	Interruption in the adoption of sustainable land management practices by farmers beyond the life of the Project	2	Medium	5.4 As per the previous points, by the end of Project implementation, concrete and solid extension activities should be completed, including concrete demonstrative results of the pilot projects, which should provide for a clear understanding and knowledge on the benefits to be accrued from the permanent adoption of SLM, and prescribed agricultural and soil conservation practices by local farmers.	RADA, FD, NEPA	Risk mitigation actions were not implemented and this has negative implications for sustainability.	**This risk is expected to negatively impact sustainability as** Competing income-generating activities, and other factors such as age of farmers could impact adoption/ continuation of SLM beyond LOP
					5.5 Before the end of the five-year Project implementation period, farmers participating/beneficiary farmers should already be accruing concrete financial benefits from the adoption of sustainable agricultural practices which should serve the basis for: (a) the continuity and permanent appropriation of such practices; (b) a demonstrative effect for farmers in both watersheds that have not been selected for the GEF Project; and (c) the sustainability of the PES framework.	RADA, FD, NEPA		
6	Reputation	Negative perceptions from the farmers and areas not selected	1	Low	6.1 The Project will have a demonstrative effect and will set the stage for the strengthening of RADA's and FD's extension services in the areas and communities of the Yallahs River and Hope River Watersheds, and other geographic areas of Jamaica.	RADA, FD, NEPA	This risk did not materialize during execution.	

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions		Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity	Responsible		
		for intervention by the Project			6.2 Training and dissemination activities will extend the benefits of the Project to other farmers and communities that have not been selected for the initiative, by creating knowledge and awareness on the potential for the adoption of sustainable practices that can improve their livelihoods over the medium and long term.	RADA, FD, NEPA		This risk is low and is not expected to affect post project operation
7	Monitoring and Rendering	Possible weaknesses in the efficiency of the implementing administration of the Project	1	Low	7.1 As part of Project preparation activities, an in-depth institutional evaluation of NEPA was conducted utilizing the tool "Institutional Capacity Evaluation System" (ICAS/SECI). The results showed an adequate financial administration and internal control capacity of the Implementing Agency, and provided for a recommendation on the utilization of its GMAX platform (i.e. national system) for Project administration.	IDB, NEPA	Mitigation actions were implemented, however follow-on actions to address	This risk should be monitored post project and mitigation actions should consider incorporation of lessons learned and good practices from the Y-H Project.
					7.2 The proper mechanisms will be implemented at NEPA for: (a) the administration of the IDB/GEF and counterpart resources; (b) the execution of budgetary transfers of Project's resources to other participating GOJ agencies and other institutions; (c) the operation of the necessary internal control systems; and (d) to compliance with IDB reporting requirements.	IDB, NEPA		
8	Fiduciary	Low or limited efficiency in procurement administration	1	Low	8.1 With resources of the Project, a Procurement Specialist will be contracted to support NEPA and all participating GOJ agencies in ensuring the compliance with IDB and GOJ procurement procedures, while expediting the purchasing and contracting functions for the three components of the initiative. For coordination purposes, NEPA will house the Procurement Specialist.	IDB, NEPA	This risk materialized, particularly in the early years of the project, along with several related issues	Risk is expected to materialise during implementation.
					8.2 An annual Procurement Plan (PP) will be prepared each year by NEPA--as implementing agency--with the aid of the procurement specialist and Project Coordinator. It will set a concrete timeline and deliverables by NEPA itself as well as all the participating	NEPA		

No.	Type of Risk	Risk	Risk Classification		Risk Mitigation Actions		Comments on the success of mitigation actions	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level	Activity	Responsible		
					agencies of the GOJ which will undertake procurement responsibilities under the framework of the Program.			
					8.3 NEPA will effectively coordinate, monitor and follow up on the compliance of the procurement plan, schedule and effectiveness by the implementing agency itself, as well as other participating agencies.	NEPA		

Comments on the 2020 RMP

Risk ID	Type of Risk	Risk (Describe potential future opportunities (positive or negative) as well as any threats that caused changes to project work, time, cost and quality.)	Risk Classification (use Key below)		Risk Response Strategy	Risk Action Plan	Did Risk Materialize/ Become an Issue for the Project?	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level				
1	Public Management and Governance	Tight Schedule for achieving project targets	3	High	Mitigate	Control of contracts and closer monitoring of review, verification and approval of project outputs	Yes	Yes
2	Public Management and Governance	Low delivery of Outputs	3	High	Mitigate	Preparation of a contracts management strategy	Yes	Yes
3	Public Management and Governance	Limited/No response from the market when advertisements are placed on GOJEP	3	High	Mitigate	Request no-objection to direct contract	Yes	Yes
4	Public Management and Governance	GOJ agencies not working together as anticipated	2	Medium	Mitigate	Technical meetings held with partners to update on performance and	Yes	Yes

Risk ID	Type of Risk	Risk (Describe potential future opportunities (positive or negative) as well as any threats that caused changes to project work, time, cost and quality.)	Risk Classification (use Key below)		Risk Response Strategy	Risk Action Plan	Did Risk Materialize/ Become an Issue for the Project?	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level				
						find solutions to problems		
5	Public Management and Governance	Low performance of consultants	3	High	Mitigate	Drafting a list of requirements for each deliverable. This will be presented for discussion at the inception meetings	Yes	Yes
6	Public Management and Governance	Inability to meet agreed deadlines for engaging consultants/provision of goods and services	3	High	Mitigate	Depending on the procurement method being used, commence procurement process at least 9 months prior to the need for the consultant	Yes	Yes
7	Macro-economic and	Reduced fiscal space to complete final year of Project execution	1	Low	Escalate	The MOF and MEGJC would be	Yes	Yes

Risk ID	Type of Risk	Risk (Describe potential future opportunities (positive or negative) as well as any threats that caused changes to project work, time, cost and quality.)	Risk Classification (use Key below)		Risk Response Strategy	Risk Action Plan	Did Risk Materialize/ Become an Issue for the Project?	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level				
	Fiscal Sustainability					engaged to outline impacts and the space required.		
8	Environmental and Social Sustainability	High risk of extreme weather during planting season	3	Medium	Mitigate	The Forestry Department to implement mitigation measures to protect seedlings	No	Yes
9	Environmental and Social Sustainability	Low adoption of sustainable land management practices by farmers during demonstration plots activities	2	Medium	Mitigate	RADA to be engaged to ensure farmers are integrated and have bought-in to the programme	Yes	Yes
10	Reputational	Negative perceptions from the farmers and areas not selected for intervention by the Project	2	Low	Mitigate	RADA to be engaged to ensure farmers are integrated	No	Yes

Risk ID	Type of Risk	Risk (Describe potential future opportunities (positive or negative) as well as any threats that caused changes to project work, time, cost and quality.)	Risk Classification (use Key below)		Risk Response Strategy	Risk Action Plan	Did Risk Materialize/ Become an Issue for the Project?	Is Risk expected to affect operations or continuation of benefits and results beyond LOP?
			Value	Level				
						and have bought-in to the programme		
11	Environmental and Social Sustainability	The lengthy approval time of the IDB for no-objection requests.	2	Medium		Timely submission of requests and liaising closely with Operations Associate.	Yes	No

Q. Annex 17: Changes in Y-H Project Outputs over the LOP

Expected Outputs (PIF 2011)	Expected Outputs (PIF 2013)	Expected Outputs (PMR 2013)	Expected Outputs (PMR 2014)	Expected Outputs (POD 2014)	Expected Outputs (PMR 2019)
Key biodiversity & natural resource data updated, collected & incorporated into national & local GIS databases & National Spatial Plan	**1.1: MoU between participating Agencies developed and signed.**	**1.1 Watershed management policy that includes biodiversity information**	Output # 1.1: MOU to manage the watershed	1.1 Watershed Management MOU approved	**Watershed Management MOU approved**
75% of government staff in 2 WMUs trained in IWRM & use of land-use and biodiversity data for watershed management	**1.2: A protocol for collecting, storing, processing and accessing data created, monitoring protocols created, and data collected for biological and ecological inventory.**	**1.2 Monitoring protocols created and implemented**	Output # 1.2: Monitoring protocols created and implemented	1.2 Socio-physical data gathered	**Socio-physical data gathered**
2 Sustainable Development Plans & Orders incorporate watershed management and biodiversity information	**1.3: A GIS-based decisions support system (DSS) for both watersheds created, configured and managed by lead agency & used by watershed**	**1.3 GIS-based decisions support system (DSS) for both watersheds created, configured and implemented**	Output # 1.3: GIS-based decisions support system (DSS) for both watersheds created, configured and implemented	1.3 Monitoring protocols implemented	**Monitoring protocols implemented**
Public awareness campaign on soil conservation and biodiversity values	**1.4: 30 government & NGO staff involved in management of 2WMUs trained in IWRM and biodiversity information management**	**1.4 Training of Government & NGO staff in IWRM and biodiversity information management**	Output 1.4: Training of Government & NGO staff in IWRM and biodiversity information management	1.4 GIS-based decisions support system (DSS) for both watersheds implemented configured and implemented	**GIS-based decisions support system (DSS) for both watersheds implemented configured and implemented**
Community participatory processes integrated into WMUs land-use planning	**1.5: A communication plan and public awareness campaign designed and implemented**	**1.5 Communication plan and public awareness campaign implemented**	Output # 1.5: Communication plan and public awareness campaign implemented	1.5 Stakeholders of two WMUs trained in IWRM and biodiversity information management	**Stakeholders of two WMUs trained in IWRM and biodiversity information management**
				1.6 Communication plan and public awareness campaign implemented	**Communication plan and public awareness campaign implemented**
Natural resources & ecosystem services in the 2 WMUs valued	**2.1:Valuation of hydrological benefits and of willingness to pay for other environmental services in the 2 WMUs**	**2.1 Valuation of ecological services**	Output # 2.1: Valuation of ecological services	2.1 Ecological services valued	**Ecological services valued**
Financial, legal & institutional mechanism to support watershed &	**2.2: Design of financial, legal and institutional**	**2.2 Design and implementation of a Payments**	Output # 2.2: Design of financial and	2.2 Payment for Environmental Services (PES)	**Payment for Environmental Services (PES)**

biodiversity conservation designed	**aspects of PES scheme**	**for Environmental Services (PES) scheme**	legal arrangement required for PES scheme	scheme, implemented	**scheme, implemented**
Pilot payment scheme implemented	**2.3: Implementation of pilot PES scheme**				
Inventory of good practices developed & disseminated to 75% of community groups & local government staff	**3.1: Extension Programme implemented (reaching at least 3000 farmers)**	**3.1 Early community involvement**	Output # 3.1: Extension Program Designed.	3.1 Extension Program monitored	**Extension Program monitored**
40% of watershed community groups trained in soil conservation, IWRM & watershed management	**3.2: Capacity Development activities for Communities implemented (200 farmers trained in Land Husbandry, 7 community groups formed and strengthened, 25members trained in non-agricultural alternatives, and 6 communities trained in fire management)**	**3.2 Capacity development for communities**	Output # 3.2: Capacity Development for Communities	3.2 Communities' capacity improved	**Communities' capacity improved**
Demonstration projects in sustainable land use, forestry and agroforestry & alternative livelihoods operating in 33% (9,790 ha) of upper & middle watershed farming 66communities.	**3.3: SLM practices implemented in 6 pilot projects**	**3.3 Improved agriculture demonstration projects established**	Output # 3.3: Implementation of demonstration projects	3.3 Agriculture practices improved	**Agriculture practices improved**
700 ha reforested		**3.4 Area reforested**		3.4 Area reforested	**Area replanted through reforestation and agroforestry**

R. Annex 18: Highlights of Y-H Project Communication and Public Awareness activities implemented

Achievements 2015-2016	Achievements 2017
✓ Project Launch April 2015 ✓ Significant social media postings ✓ Media release "Farmers Get Schooled in Better Habits" ✓ Loop News article "NEPA Launches Watershed Programme" ✓ Launch of the 'Trees for Life' campaign ✓ Project Newsletter ✓ Media interviews and news bites ✓ Special Tree Planting Event ✓ FFS Graduation Paraphernalia ✓	✓ Anti-burning road show and campaign ✓ Social media activity ✓ Watershed jingle ✓ Million Tree Challenge ✓ Mainstream Media Coverage ✓ Memorabilia ✓ Farm to Plate Tree Planting Activity ✓ Quarterly newsletter "Catch and Release" ✓ Social mobilization through TIAs and public events ✓ Videos ✓ Participation in Wood and Water Day; National Tree Planting Day; Fire and Life Safety Awareness Week; GIS Day Expo, UWI; ✓ Advocacy through the Rotary Clubs

Achievements 2018	Achievements 2019-2020
✓ Writing 2018 Communication Plan ✓ Writing and distributing Media Release re Coffee Seedlings distributed to Famers ✓ Writing and distributing Media Release for anti-burning awareness campaign ✓ Commencement of land husbandry best practices text messages to 417 farmers ✓ Distributing newsletter Catch & Release – The Biological Treasures Within ✓ Planning and executing 2018 Anti-Burning Road Shows in Mavis Bank (February 9); Papine (February 16); Windsor Forest (August 23) ✓ Jamaica's Million Tree Challenge webpage to reflect registered trees ✓ Media interviews and print newspapers and electronic blog articles written ✓ Finalized watershed logo for promotional item production	✓ Ecosystem Services Incentive Program (EcoSIP) launch at symposium "Cocktails with Nature" February 2020 ✓ Y-H Project selected as a finalist in the "IDB Superheroes of Development" competition, highlighting its resilience; three audio visual productions were prepared to be featured in the project's presentation in Washington D.C. ✓ Television Advertisement Campaign with 25 slots ✓ Four community sensitisation session in the project area ✓ Social Marketing Campaign to boost national awareness and to foster behaviour change ✓ Farmer Field School Graduation ✓ Monthly radio programme "Watershed Moment" ✓ Engaged the Minister with portfolio responsibility for water, Senator Pernell Charles Jr. as part of thrust to identify a project champion

✓ Produce and commenced the airing of three (3) Public Service Announcements for national awareness on 5 radio stations (Mello FM, Love 101 FM, RJR 94 FM, FAME 95FM, Hitz 92 FM)

✓ Executed World Water Day Tree Planting activity at Louise Bennett Coverley All Age School

✓ Supported NEPA's anti-burning community engagement in Clarendon's Rio Minho Watershed

✓ Plan and execute Farmer Field School Graduation

✓ Designed Farmer Field School Brochure and create video

✓ Provided plants to support the Violence Prevention Alliance's Peace Day 'Trees for Peace' initiative

✓ Developed Watershed Mural to enhance exhibit presence and educational outreach

✓ Sponsorship and attendance of Jamaica 4-H Clubs National Achievement Day

✓ Outside Broadcast and two road shows to support International Day for Biological Diversity

✓ Design of artwork for JUTC Bus Wrap, Billboard and Book Cover

✓ Prepared newsletter 'Catch & Release' covering period October 2017 to June 2018

✓ Supported National Environmental Awareness Week Road Show in Cross Roads

✓ Executed FFS graduation, including production of brochure

✓ Hosted KAPB findings presentation and press conference

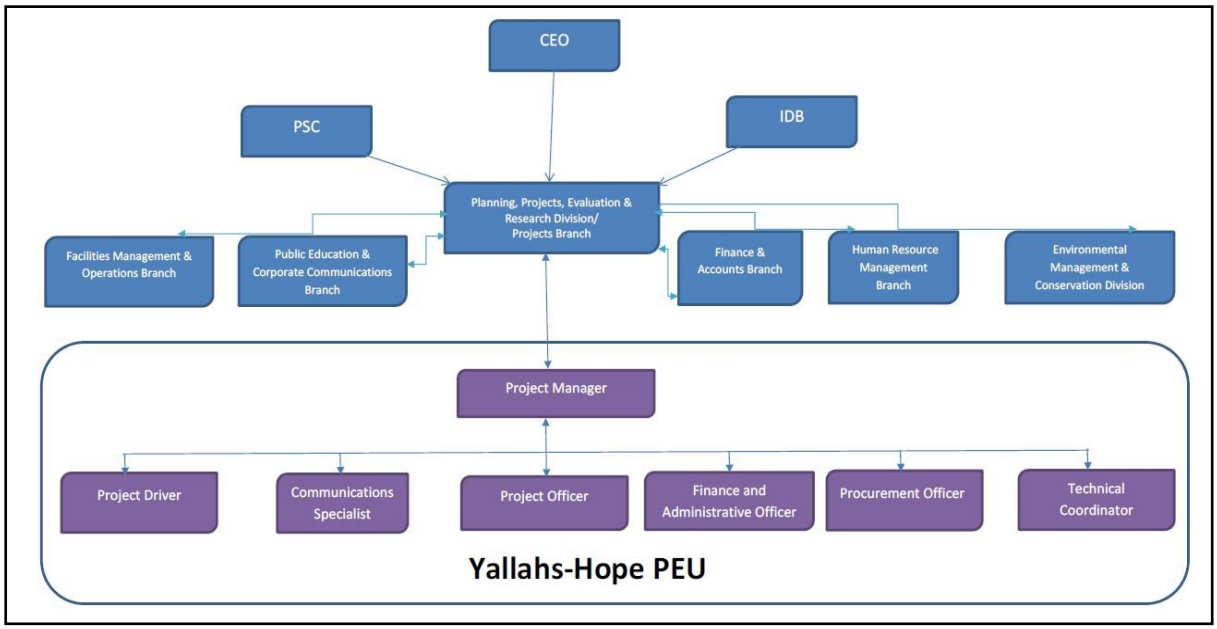
✓ Highlight of project jingle and video

✓ Student Watershed Action Group (SWAG) programme engaged

✓ Participation in Global Forum for Rural Advisory Services (GFRAS), including a presentation and booth

S. Annex 19: Y-H Project Organogram and PEU Staffing Arrangements

Y-H Project Organogram



(NEPA, 2018)

PEU staffing arrangements

Personnel	**Date hired**	**Staffing status**	Funded by
Project Coordinator (Project Manager)	February 15, 2015 (revised March 24, 2017)	Consultant	GEF
Project Manager	July 23, 2018	NEPA Staff	GOJ
Project Manager	May 1, 2020	NEPA Staff	GOJ
Finance/Accounting Officer (Finance and Administration Officer)	April 13, 2015 (revised March 24, 2017)	Consultant	GEF
Procurement Officer	April 13, 2015 (amended December 8, 2016, June 14, 2018) to October 31, 2019 and to October 31, 2020	Project Staff	GOJ
Technical Coordinator 1	September 4, 2017	Project Staff	GOJ
Technical Coordinator 2	July 23, 2018	NEPA Staff	GOJ
Technical Coordinator 3	June 1, 2020	NEPA Staff	GOJ
Project Officer	December 4, 2017 (amended to end October 3, 2019)	Project Staff	GOJ
Driver	September 30, 2016 (replaced October 9, 2017)	Project Staff	GOJ
Communications Consultant 1	July 6, 2016 (revised March 24, 2017)	Consultant	GEF
Communications Consultant 2 (replacement)	April 18, 2019 (to October 2020)	Consultant	GEF

T. Annex 20: PEU EOP Survey

ME_Survey_Final

Enter a date:

yyyy-mm-dd

Record your location:

latitude (x.y °)

longitude (x.y °)

altitude (m)

accuracy (m)

Farmer Field Schools aim to improve land management practices in the Yallahs and Hope Rivers WMUs through targeting farmers in these areas. Farmers are enlightened of their roles and responsibilities in the conservation of biodiversity and improvement of ecosystem services in the Yallahs River and Hope River watershed management areas. This is done by training farmers in best practices which reduce farm input and increases production while preserving their lands. This questionnaire serves as a tool to evaluate the impacts of the Farmer Field Schools on farming communities where schools are held. Please answer the following questions as best as possible.

- ◯ OK

Which of the following extension services have you received from RADA ?

focus the farmer's attention to the years since the project started (the fire would be a good reference point)

- ◯ Text Messages
- ◯ Farm Visits
- ◯ Farmer Field School
- ◯ None

To what age group do you belong

- ◯ Below 30
- ◯ 31-45
- ◯ 46-59
- ◯ 61 and over

What is your gender?

- ◯ Male
- ◯ Female
- ◯ Other

Indicate the highest level of eductation obtained

- ◯ Primary
- ◯ Secondary
- ◯ Tertiary
- ◯ Technical/ Vocational

How many persons are currently living in your household?

_____

Are you currently the sole bread winner within your household?

- ◯ Yes
- ◯ No

If no, how many other persons within your household are currently employed?

_____

Is Farming your main source of income?

- ◯ Yes
- ◯ No

How did you hear about Farmer Field School?

- RADA Officer
- Community Notice
- Church
- Another Farmer
- Other

Specify other source of information on Farmer Field School

_____

Why did you decide to attend Farmer Field School?

_____

How far away from the Farmer Field School location do you live?

- less than 1 mile
- 1-2 miles
- 3-5 miles
- 6-10 miles
- above 10 miles

What is the size of your farm?

- Less than 1 Acre
- 1-2 Acres
- 3-5 Acres
- 6-10 Acres
- Above 10 Acres

How is this land currently being utilized? Tick all that apply

- [ ] Crops
- [ ] Pasture
- [ ] Hardwood Trees
- [ ] Fruit Trees
- [ ] Forest

Do you practise irrigation?

- ◯ Yes
- ◯ No

If yes, what is the source of the water used

_____

Approximately how much do you spend on fertilizers each year?

- ◯ does not use
- ◯ $20,000 or less
- ◯ $21,000 to $50,000
- ◯ $51,000 to $100,000
- ◯ $101,000 to $150,000
- ◯ Over $150,000

Since attending Farmer Field School has there been a reduction in how much you spend on fertilizers?

- ◯ Yes
- ◯ No

Approximately how much do you spend on pesticides each year?

- ◯ does not use
- ◯ $20,000 or less
- ◯ $21,000 to $50,000
- ◯ $51,000 to $100,000
- ◯ $101,000 to $150,000
- ◯ Over $150,000

Since attending Farmer Field School has there been a reduction in how much you spend on pesticides?

- ◯ Yes
- ◯ No

Approximately how much per month did you earn from your farm?

_____

Have you seen an increase in earnings since farmer field school?

- Yes
- No

Are you presently able to access credit/loan from the bank/ credit union of which you are a part?

- Yes
- No

Which of the following do you currently own?

- Tractor
- Pick axe
- Fork
- Spray pan
- Car/Van/Bike
- Donkey
- Livestock
- Irrigation Equipment

Is there a farmer's group within your community?

- Yes
- No

Are you a member of a farmers group?

- Yes
- No

If yes, how often does it meet?

- weekly
- monthly
- quarterly
- yearly
- other

How often does the RADA Extension Officer visit your community?

- ◯ weekly
- ◯ monthly
- ◯ quarterly
- ◯ yearly
- ◯ other

Over the years have you noticed changes in the land due to soil being washed away by rain?

- ◯ Yes
- ◯ No

What changes have you noticed in the rainfall and temperature patterns in the vicinity of your farm?

_____

Have you learnt anything new in these Farmer Field School sessions?

- ◯ Yes
- ◯ No

If yes, what have you learnt?

_____

Do you see where the methods learnt in FSS can reduce your farming cost while increasing production?

- ◯ Yes
- ◯ No

Give a reason for your answer

_____

Have you implemented the methods taught, on your farm?

- ◯ Yes
- ◯ No

If no, which of the following best describes your reason for not implementing the methods taught on your farm

- ◯ Too expensive to implement
- ◯ I do not think it will work
- ◯ Not sure how to do it on my own
- ◯ No reason

Which of the following soil conservation techniques do you presently use on your farm?

- [ ] farming along contours
- [ ] Strip Cropping
- [ ] Alley Cropping
- [ ] Grass Barriers
- [ ] Pineapple Barriers
- [ ] Organic Trash Barriers
- [ ] Terracing, trenches
- [ ] Individual Basins
- [ ] Checked dams or gully plugs
- [ ] Mulching, composting

Whats preventing you from implementing more soil conservation techniques on your farm?

- ◯ Too expensive to implement
- ◯ I do not think it will work
- ◯ Not sure how to do it on my own
- ◯ No reason

Would you recommend these methods to other farmers?

- ◯ Yes
- ◯ No

Thank you for your participation. Your input is valuable and as such greatly appreciated.

- ◯ OK

U. Annex 21: Results of Soil and Water Assessment Tool (SWAT) analysis conducted by PEU

ANALYSIS OF THE IMPACT OF LAND USE CHANGES ON SEDIMENT PRODUCTION WITHIN THE YALLAHS AND HOPE RIVER WATERSHED MANAGEMENT UNITS

Andre Reid
Yallahs Hope PEU

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Background

The Integrated Management of the Yallahs and Hope River Watershed Management Areas Project is funded by the Global Environment Facility (GEF) through the Inter-American Development Bank (IDB) and the Government of Jamaica (GOJ). The project agreement between the GOJ and the IDB was signed on 1st day of October 2014, with activities slated to conclude 31 October 2020. The projects intent, beyond the various impacts, outcomes and outputs, was to serve as a pilot for an integrated approach to watershed management on the island. Using this integrated approach, the project has had various marked successes which include:

- Reforestation of over 500 Hectares of degraded lands
- Engagement of over 5000 individuals on the need for sustainable land management practices and the conversion of lands into areas under sustainable land management practices.
- Design of a Geographic Information System based Decision Support System.
- Design of a sustainable finance scheme for watershed management on the island, the Payment for Ecosystem Services Scheme.
- Review of the Watershed Policy
- Programmatic review of the Watershed Area Management Mechanism.

As the project moves towards it terminal disbursement date, a key validation of the projects implementation logic is the need to ascertain the level of sedimentation that has been reduced due to direct intervention under the project. This is in line with the quantification of Impact 1 of the project which speaks to reduced soil erosion and siltation in both watersheds. As per the results matrix for the project, the indicator for this reduction in soil erosion and siltation should be the level of sedimentation within waterways. The results matrix further asserts, inaccurately so, that the installation of nine (9) gauges would effectively prevent sedimentation and control flow. The issue of sedimentation is more accurately expressed as a function of continued land degradation within the Yallahs and Hope Watershed Management Units. Over the years unsustainable land management practices within the watershed has led to increase soil loss and subsequent increases in siltation within waterways. Historically the issue has been linked to increased agricultural production particularly monoculture practices within the region (Barker and McGregor 1988). Globally, land use change and subsequent degradation has been demonstrably shown to have an impact on both soil properties and soil erosion (Matano, et al.

2015)& (Borrelli, et al. 2020) . Promotion and implementation of sustainable land use changes could thus be argued as a means to achieve a reduction in sedimentation yield coming out of the Yallahs and Hope Watersheds. This logic is reflected within the design of the project which identified key areas, such as reforestation and promotion of sustainable land management, as methods through which the intended reduction in sedimentation could be achieved. The proceeding reports seeks to quantify whether or not the identified approach has had the intended impact.

Methodology

In line with the approach taking during the technical preparation stage of the project (Riverside Technology INC 2012), and again at the output stage through the Hydro-meteorological Consultancy, the Soil and Water Assessment Tool (SWAT) was selected as the preferred modelling approach for the quantification of sediment loss within the project area post implementation. SWAT is a basin-scale continuous time model that operates on a daily time step with the capacity to predict impact of land management on, inter alia, water production and more importantly, within the context of this study, sediment yield (Gassman, et al. 2007). The approach taken within the context of this study builds on that which was conveyed at a workshop in fulfilment of the Hydro-meteorological consultancy, conducted by Dr Shemelis Setegn. Details on the hydrological considerations behind the approach, particularly within the context of Jamaica, have been documented (Setegn, et al. 2014).

SWAT may be used as a standalone programme or more commonly as a command line tool integrated within a GIS based platform. ARCSWAT, which is the version of SWAT that is compatible with the ARC GIS platform being utilized by the Government of Jamaica, was utilized within this study.

Model Input requirements

In addition to the various in built hydrological formulae, SWAT requires various input files in order to produce outputs. Said files may be raster or vector based, though vector files are converted to and exported as raster during processing. Input files required for SWAT processing includes:

- Digital Elevation Model (DEM)
- Land Use Data

- Soils Data
- Weather Data
- Flow data (required for calibration)

Based on the initial data mapping that was undertaken pre implementation, in addition to ongoing data sharing between the implementing partners of the project, all required data for the running of the model was available within the Project Executing Unit. A key component of the analysis, particularly in light of the hypothesis being tested, was the need for accurate land use data. Said land use data was sourced from the Forestry Department and was last updated in 2017, figure1. SWAT and by extension ARCSWAT has an inbuilt database of plant types and generic land use types from which key hydrological considerations are both known and derived. In order for the system to adequately produce model outputs, country specific classifications have to be reclassified to fit into known plant categories and or generic land use types. Reclassification of the land use types followed the approach utilized by CATIE (2018) and Setegn (2018), figure 2.

In order to determine the impact of interventions on sedimentation, the SWAT modelling was conducted firstly with the land use data as per the Forestry Department dataset. The generated outputs were then compared against a second set of outputs generated using a modified land use database. Modification of the land use database was done using the land use update tool within ARCSWAT as well as through the reclassification of broad land use categories based on the interventions done by the project. Visualisation of the outputs was achieved through the use of SWAT Output Viewer and ARCGIS.

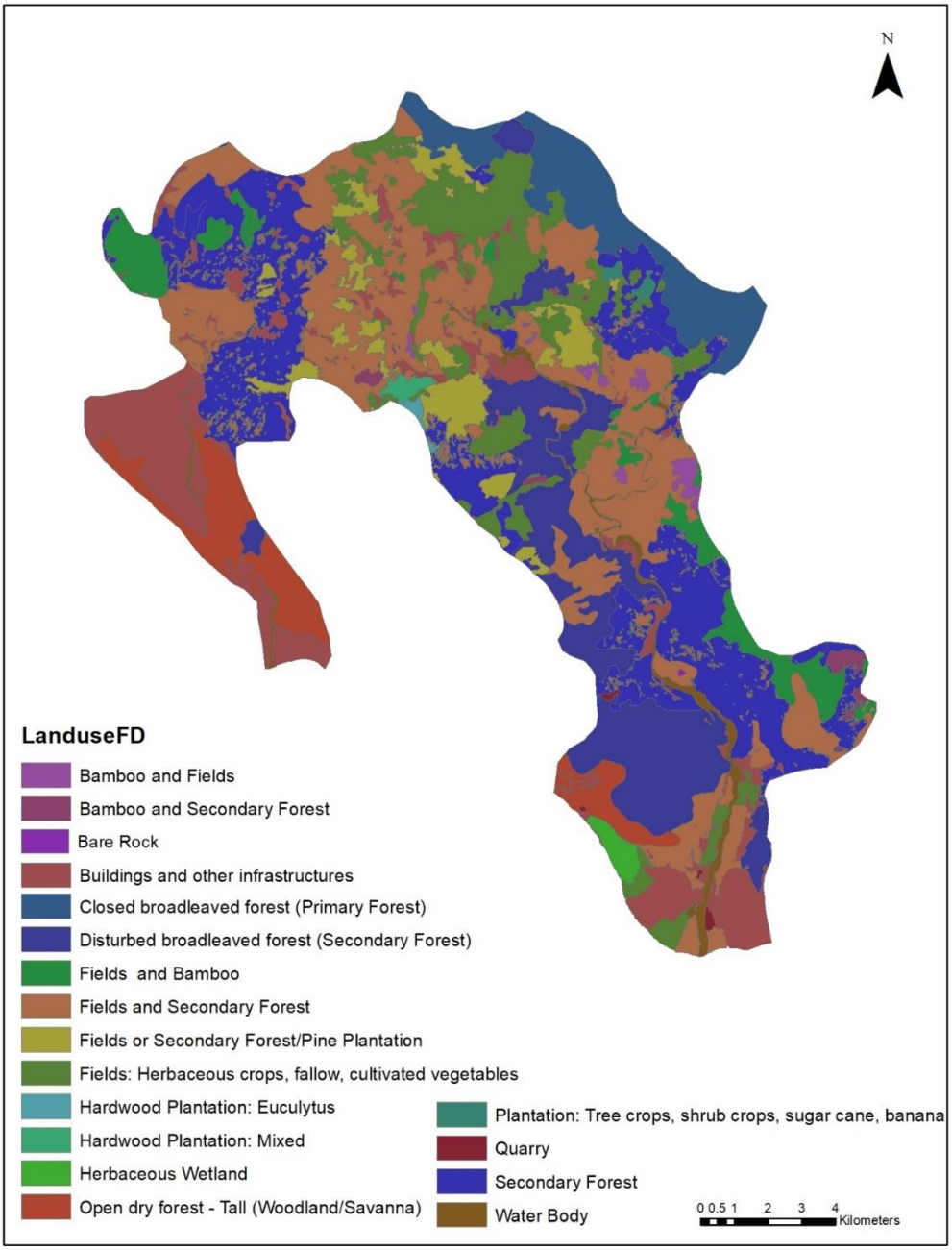

Figure 1: Land use categories within the project site. Input shapefile for land use as per Forestry Department (2017).

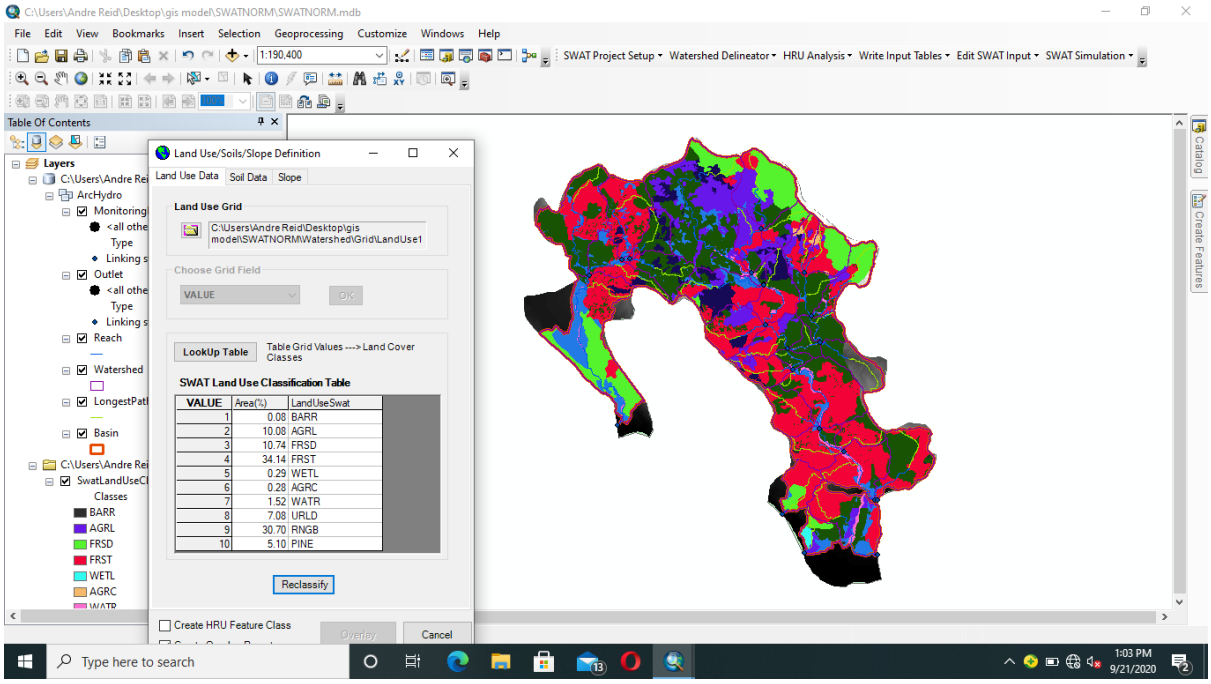

Figure 2: Reclassification of land use types within ARCSWAT.

Model Results

Though it is possible to forecast the impact of land use change on sedimentation using the SWAT model, this action would necessitate inputting predictions of weather conditions, in line with present climate change trends, in order to ensure model robustness. The approach taken within the conduct of this study follows that of Alibuyog, et al. (2009) wherein the model run, both for baseline and simulations of land use change, were applied to a period with known climatic values, i.e. a period for which weather data had already been collected. For the purposes of this study, the model was executed over a period of 35 years using the 2017 land use reference data to serve as a baseline for analysis. The outputs from the baseline were then compared against the simulated land use change for the same period.

Using the 2017 land use reference data, the model showed an average yearly sediment yield of 778 tons, figure3. These values were found to be comparable with the work put forward by CATIE (2018) and Setegn (2018) in furtherance of the Payment for Ecosystems Services

Consultancy as well as the Hydro-meteorological consultancy.

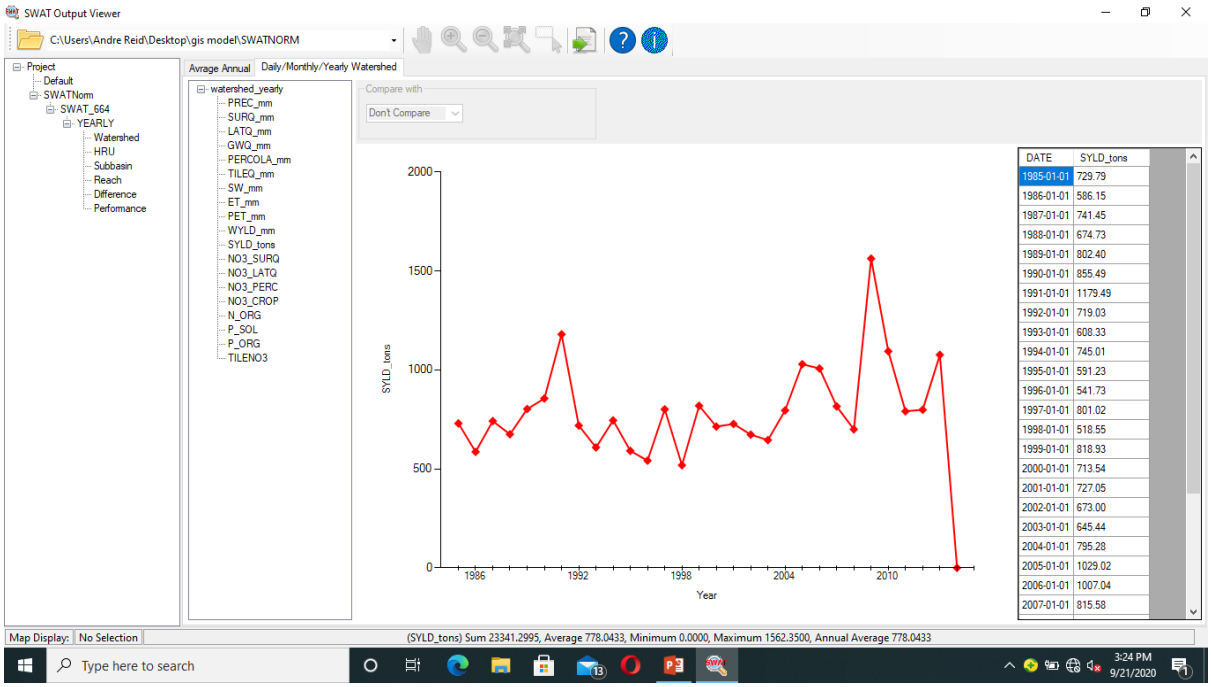

Figure 3: Annual sediment yield using the 2017 Land use reference dataset.

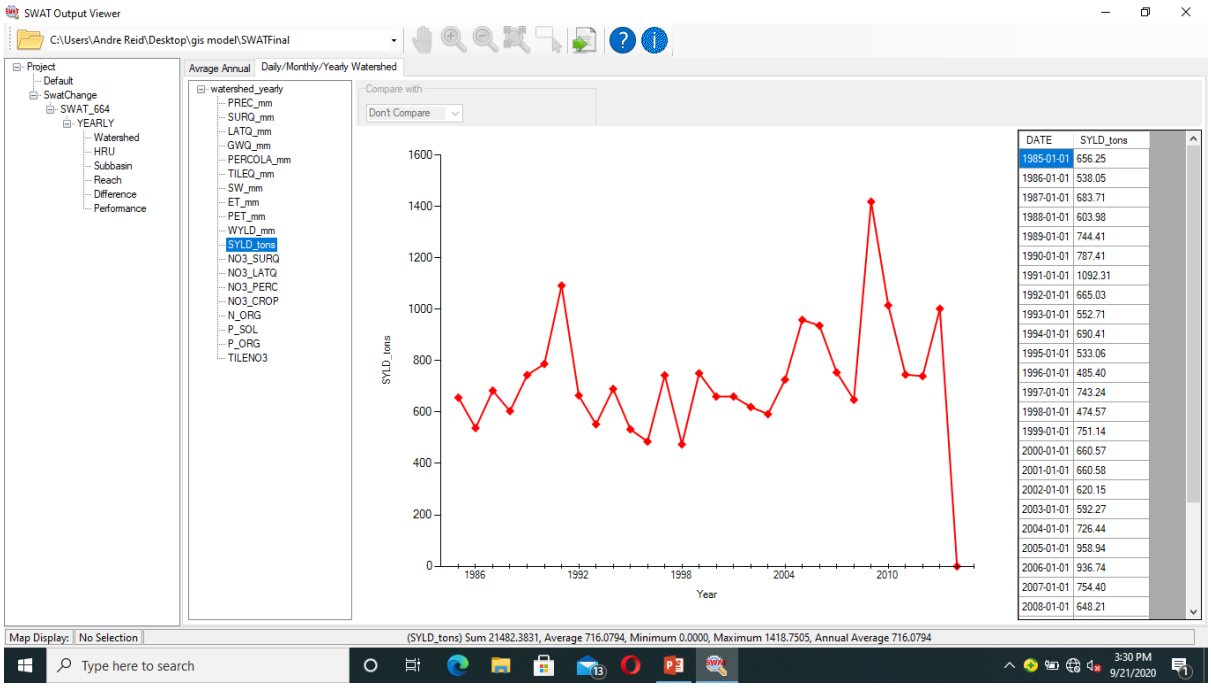

Figure 4: Annual sediment yield simulated using post intervention land use values.

In comparison, simulated values for annual sediment yield using post intervention land use data showed an average annual value 716 tons, figure 4. This represents an average annual reduction of 62 tons, an 8% reduction in sediment yield.

The intervention scale considered under this approach corresponds directly with the direct intervention done under the project, i.e the 565 ha of land replanted. It should be noted however that the Proposal for Operation Development (POD) section 1.19, and the Financial Agreement (FA) section 2.08, points to reforestation efforts done through the then Forest Conservation Fund (FCF) as well as under the Climate Change Adaptation and Disaster Risk Reduction Jamaica project, as being complementary to the reforestation done under the Yallahs Hope Project. The total intervention is highlighted in table 1.

Table 1: Intervention within the Yallahs and Hope Watershed Management Units over the period 2006-2020.

Source of Data Reported	Planned (Ha)	EOP Actual Achieved	Period of Implementation	PEU Comment (if Any) e.g. change in FD hectares to RADA Or the partner or project report that provides details. Types of species planted
FD (Y-H Project PA)	400	80.8	2015-2020	Field reconnaissance conducted during implementation showed a reduction in plantable hectares. Planting thus shifted to agroforestry based approach. Spanish Elm, Jamaican Mahogany, Bitter Damsel, West Indian Cedar, Dogwood, Wild Tamarind, South African Yacca, Prickly yellow, Blue Mahoe, Wild Tamarind, Fiddlewood, Rodwood, Pruan, Bitterwood, Milkwood, Honduran Mahogany, Santa Maria, Cornwood
RADA (Y-H Project PA)		273.66	2019-2020	mango, sour-sop, lychee, breadfruit, ackee, naseberry, avocado, Otaheite apple, coconut, banana, plantain, MD 2 pineapple, pimento,

				cherry, jackfruit, guava, coffee, June plum, nutmeg, pomegranate and longan
FCF	116	531	2006-2018	
PIOJ/FD	200	200	2011-2013	Caribbean Pine, Cornwood, Milkwood, Pruan, Silky Oak, Blue Mahoe, Cedar, Mahogany (Honduras), Mahogany (Jamaican), Bitter Damsel, Santa Maria, Spanish Elm, South African Yacca, Juniper Cedar, Soap berry, Gmelina, broadleaf, Eucalyptus, Yokewood, Cupressus, Cherry Bullet, Wild Tamarind, Milkwood, Teak, Fiddlewood
Project led Planting		210.54	2016-2019	Ackee, Avocado, Breadfruit, Citrus, Coconut, Coffee, Lychee, Mango, Nesberry, Pimento, Pineapple, Soursop, Bitter Damsel, Cedar, Blue Mahoe, Mahogony, Teak
Total		1296		

Using this extended coverage, a third scenario was modelled within SWAT. Under this scenario, the simulated value for annual sediment yield was found to be an average yearly value of 642.78 tons, figure 5. This suggest a 17 percent reduction in sediment yield per year over the baseline scenario.

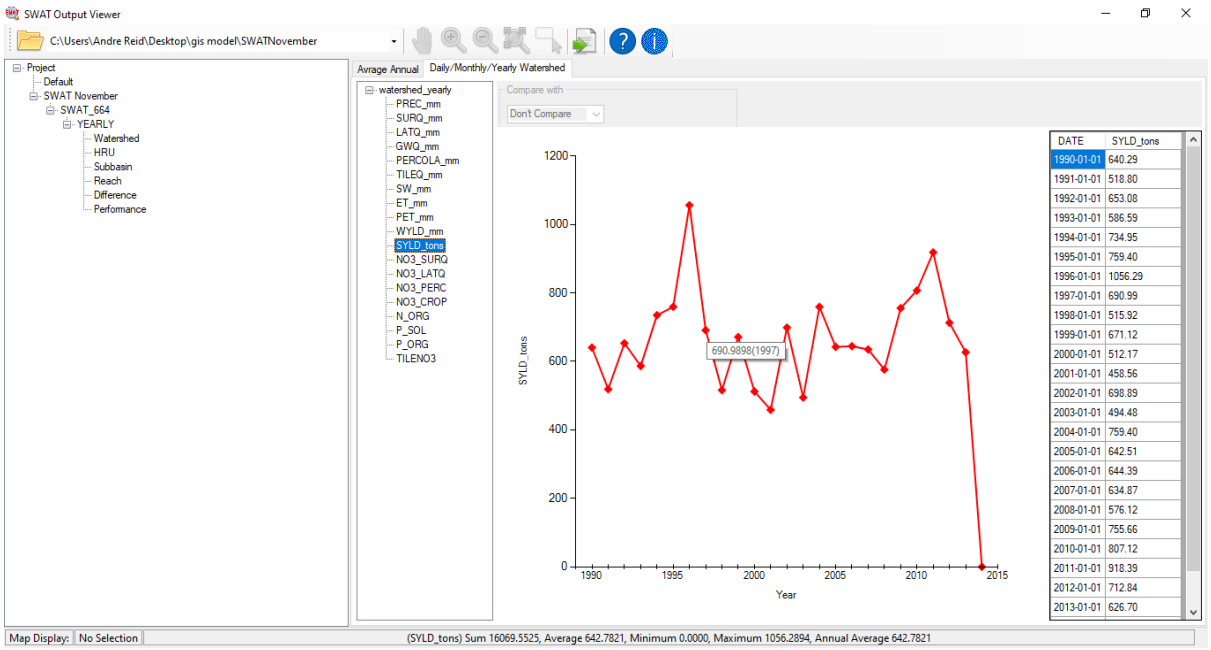

Figure 5: Annual sediment yield simulated using direct and indirect intervention land use values.

Discussion

According to Yang et al. (2008), the main sources of uncertainties are 1) simplifications in the conceptual model, 2) processes occurring in the watershed but not included in the model, 3) processes that are included in the model, but their occurrences in the watershed are unknown to the modeler or unaccountable, 4) processes that are not known to the modeler and not included in the model, and 5) errors in the input variables such as rainfall and temperature.

Within the context of this study, the most applicable limitation would be the simplification of the conceptual model. From the baseline standpoint, it was assumed that the 2017 land use values would be applicable throughout the period of interest. It is known however that land use changes gradually over time. The level of granular data required for a robust baseline however does not exist. Setegn (2018) in his analysis of the two known Forestry Department land use datasets that exist, 1998 and 2017, concluded that some of the changes in land use categories observed was more in tune with advancements in remote sensing capabilities over the years. Thus it would be difficult to compare both datasets with a view to ascertain rate of land use change which would in turn allow for incorporation within the model.

Throughout the period of review, extreme weather events such as tropical storms, hurricanes and droughts would have impacted precipitation values and subsequently the level of surface run offs from the study area. SWAT however does not take into account influxes to the riverine system from landslide occurrences which predominate the area due in part to its geology and inherent steepness. Typically, model robustness is enhanced through the use of calibration,

which for SWAT is achieved using SWAT Calibration Uncertainty Program (CUP). The Yallahs and Hope Watersheds did not contain any sediment gauges from which observed sediment values could be obtained.

Though not calibrated it should not be lost that the SWAT was originally intended for ungauged large watershed basins with minimal calibration (Arnold, et al. 1998). Thus for the purposes of this research it use in validating and providing a theoretical quantification of sediment reduction is maintained.

Conclusion

Through SWAT analysis, the PEU was able to demonstrate a reduction in sedimentation due to implementation of activities under the project targeting land use change. The level of reduction was conservatively put forward at 8%. If consideration is given to the complementary planting mentioned with the Financial Agreement, then a 17% was demonstrated. Though uncalibrated due to the unavailability of sediment gauges and associated sediment data within the target watersheds, it should be noted that within the present results matrix the target for EOP does not speak to a specific value for reduction in sedimentation. Thus having proven a reduction based on land use change the project logic is maintained and the impact verified.

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V. Annex 22: Lessons Learned

TE analysis of the Y-H Project has revealed several lessons and good practices that are important for projects generally, follow-on initiative(s) for the Yallahs and Hope WMUs and specifically for watershed management. These have been presented below.

Management Area/Phase	Lesson
Design	I**n designing projects, particularly those that are complex and testing novel approaches, it is important to balance project complexity and host country's absorptive capacity.** Equally ensure that: i. Project support includes a good mix of local and international expertise that balance technical know-how and local context and underpinnings. ii. Targets are carefully set in design to allow for the country to move beyond the business as usual, but without being overly ambitious, which can lead to underperformance. iii. The remit and capacity of project partners are considered when establishing project targets and early and targeted capacity building (e.g., knowledge exchange programmes) provisioned to address gaps.
Design	**Consistent stakeholder involvement in project design is imperative to ensure that budgets and timelines are reflective of actual work orders to be carried out and the project reflects the local context. This will ensure buy-in and ownership for project strategies and activities. Failure to engage stakeholders can result in serious challenges during implementation and for achievement of project outputs and outcomes.** • **Design should utilize a strong participatory process that (i) involves key partners in all aspects of design and (ii) obtains consensus on final design elements for the project and (iii) leads to agreement on identified stakeholder roles and responsibilities**. This will allow for identification of capacity gaps and needs; building capacity of partners in the different facets of the project; minimizing duplication of efforts; building ownership of project activities and creating commitment to achieving project results. • **Partnership agreements should not be considered only as a project output, but more importantly, as an enabling condition for effective implementation.**
Design	The project's design reconnaissance phase is very important to ensure the planned implementation outcomes and the execution strategy are not affected. There is need to ensure that the baseline is properly done to ensure that the implementation strategy is not built on any false premises.
Design	Where project concepts are novel, design cannot be overly ambitious as project implementation will likely experience hiccups and not be implemented as planned.
Design	When co-financing resources are being allocated, consider these supporting interventions in the context of alignment with the PDO; complementarity and plans put in place for actively monitoring results and how these relate to the project's own results.
Pre-Implementation	**A pre-implementation phase/period that is targeted and maximized is essential for success, particularly for multi-year and multi-partner projects.** This phase should include (i) meeting special terms and conditions of the financing agreement; (ii) EA readiness activities for project, including onboarding of full complement of PEU staff; (iv) knowledge transfer from design stage; (v) planning meetings with stakeholders to finalize activity sequencing, work plans and other critical project elements (vii) preparation of project procurement documents, including preparation of scoping and bidding documents for works, services and goods, with input from key stakeholders.
Pre-Implementation	**It is important that the EA, PEU (and project partners) are aware of the (relevant) terms, conditions and requirements of the project/financing agreement and that project plans are structured accordingly.**
Pre-Implementation	**Significant time lag between project design and implementation can be problematic with stakeholder priorities and personnel changes and activities being advanced through alternative**

	financing, resulting in a need for project scope adjustments. Where there is significant time lag between project design and implementation: • **Project design documentation should be reshared and project partners should be re-engaged prior to project start-up** to ensure (i) all assumptions still hold true and any identified deviations addressed; (ii) Stakeholders are reminded of their commitments and so they can begin to plan for same (include in their annual work programmes); (iii) to address gaps emerging on account of staff turnover. • **Planned activities, timelines and costs should be reassessed at start-up and measures put in place to address any identified gaps**, with donor approval, and while adhering to project logic.
Implementation	Where a host country is embarking on a project with novel approaches and mechanisms it is important to ensure that significant support and backstopping are provided throughout the LOP. Host country and donor representative must equally determine the kinds of support they will provide and closely monitor performance; identify ongoing capacity needs and challenges; and make the necessary adjustments to respond to these. Projects of this nature requires built in flexibility to allow for unforeseen challenges and institute adaptive actions where necessary.
Implementation	**Inter-agency cooperation is challenging but necessary and requires ongoing coordination by a central unit that has the potential to bring stakeholders together, work through disagreements and create an atmosphere for sharing. It requires dynamism, strong leadership and project management skills. Building trust and reciprocity among stakeholders is also important. The EA should ensure that significant support and backstopping are provided from design and throughout the LOP**. The EA should ensure that: • **Inter and intra agency process flows are worked out prior to even signing a project agreement to minimize administrative challenges during implementation.** Preparation for project implementation and readiness are key to strong project implementation performance. Internal coordination of EA units that will support the PEU is essential and should be well planned prior to project start-up. This should include definition of all process flows and communication channels in preparatory work. • **The PEU is fully staffed from early in the project, which is is important for efficiency**. Strong support and backstopping is required from the EA, within which the PEU resides. • At the earliest possible time, synergies and the support to be provided to the PEU are established. Where the project must have dual response to the host government and donor/administrator policies and procedures, synergies must also be created. Given the EA will host the PEU, its coordination of its internal systems and units is critical for smooth execution. Otherwise project efficiency will be seriously affected. • Capacity gaps within the PEU are filled as they are identified, to help reduce risks to implementation. • **There is a solid understanding of donor requirements, especially as it relates to special terms, conditions and stipulations of the Financing Agreement**. This should also be reflected in the PEU, especially for adherence to covenants, rules and requirements. • Structures are in place to provide effective oversight of the project.
Implementation	PEU capacity to implement complex projects, particularly those that are expected to be transformative, and the EA's ability to provide backstopping, are critical to project success. **The PEU should effectively:** • **Manage the project**. Complex projects require a solid PEU with the requisite knowledge and skills to carry out management, administrative, coordination and technical functions. The management of risks in support of PDO is an important element. • **Regularly engage and manage stakeholders**. Stakeholder management is critical (key project management area that needs to paid special attention) in a project of this nature and has to feature as a main element, embedded in the way activities are implemented.
Implementation	The PEU must have the requisite capacity to adhere to donor conditions and procedures. Regular donor/executing agency/PEU communication and interaction can help to keep implementation targets on track and provides a forum for addressing concerns and issues in a timely manner.

Implementation	Partner agency capacity for project management will vary and this must be well understood, with support provided, where needed. Any agreement established must be routinely monitored and where there is weak adherence to requirements of any party it must be communicated and adaptive action taken
Implementation	Corporate planning processes should be done with implementing partners so project work can be included in partners' corporate/operational plans. Also, where partners have equal interest, then it serves well if an institutional assessment is done for all partners, not just the coordinating entity/EA.
Implementation	**Understanding of the project's intervention logic is a fundamental requirement for projects, and the logical sequencing of project activities to achieve the PDO follows on this, especially for an integrated, coordinated project.**
Implementation	**The EA and PEU should take remedial action to address:** • **Project issues and challenges, including any capacity deficiencies, contributing to poor project performance.** Where required, there should be escalation to established internal and external oversight structures. • **Gaps linked to limitations on agencies'** resources and the fact that often multiple projects are being implemented by the same teams. It is also generally difficult to hire new staff without project support. Any deviation from project timelines has implications for the agencies, especially as project timelines begin to coincide. These should be appropriately considered by PEU and EA.
Implementation	The PEU should provide the necessary support to consultancies and lead the process to ensure quality delivery while ensuring synergies and interlinkages between consultancies are exploited to ensure successful achievement of PDO. The PEU should: • Provide the necessary pre-bid support, using approved mechanisms such as bidder conferences, to ensure consultants understand requirements. • Establish and make use of technical review committees with required expertise to effectively contribute to review processes. • Ensure preparation and readiness for consultancies, which is key for successful implementation. Communication with key stakeholders complemented by data gathering exercises are crucial to reduce the potential for delays. PEU support is important throughout the life of the consultancy. • Ensure there is agreement and sign-off by stakeholders on key project outputs before closing out a consultancy. Failure to do this can result in a stalemate resulting in major challenges as the project progresses and this can ultimately affect PDO achievement and continuation of benefits.
Implementation	Projects with linked activities require carefully planned synchronization. Failure to achieve this synchronicity results in a domino effect, when one activity is delayed. All other activities are also delayed and, any change in the order of implementation affects the nature and quality of results.
Implementation	Delays affect linked actions where actions are dependent on a precursor milestone or output, and will have a domino effect. The link between components must be considered as a factor contributing to delays in achievement of the final product. Where components of a project are to be delivered sequentially, it is important to build necessary lags into the procurement plan.
Implementation	Agencies' resources are limited and often multiple projects are being implemented by the same teams. It is also generally difficult to hire new staff without project support. Any deviation from project timelines has implications for the agencies, especially as project timelines begin to coincide.
Implementation	**The EA and PEU should, in collaboration with key partners and donor support, determine and undertake those actions necessary for facilitating continuation of project benefits and outcomes beyond LOP**. Considerations for long term impact and sustainability must be developed in a participatory way, involving implementation partners. It must be developed in the context of the project's governance and management structure and those of partner agencies.
Project Management	A proper archival system as well as capacity and knowledge exchanges between project teams, where possible (e.g., from design team to implementing team), are needed to ensure elements of

	one stage (e.g., design) are transitioned into, and used to inform, the next (e.g., implementation). Records of all changes to project documents are maintained, including justification, for ease of reference.
Project Management	Need lessons learned from past/ongoing projects to inform other projects. It is not always easy to rescope so lessons learned need to be documented to inform other projects, so they avoid making mistakes of other projects
Project Management	Planning during all stages of project should be participatory/benefit from full involvement of partners. It is important to establish and maintain good relationships/ synergies to maintain good flow of project activities. Stakeholder buy-in is important; need constant communication. Messages should be matched to audience.
Project Management	There should be integration of reporting requirements across the project. That is, each entity that reports should be cognizant of how its data and information contributes to reporting against the RM. Additionally, the use of a project performance dashboard and associated trigger actions that allows oversight units and structures and entities, internal and external to the EA, to "at-a-glance" determine the state of project performance is critical to identifying when intervention is needed.
Project Management	Risk management is key and has to transcend the act of preparing a plan. Continuous monitoring and management of risks will help to reduce potential for delays. The project's performance at risk management should be tracked on a routine basis and adjustments made as required. Threats related to the natural environment and health are important and must also be considered as part of risk management as they are important factors that can affect the project.
Project Management	Ensure that the message being conveyed to project target audiences is well-communicated and increases their understanding and appreciation that results in behavioural change, whether via acceptance or action taken.
Monitoring and Evaluation	A clear mechanism must be put in place to ensure there is data to support future impact and outcome assessments. This is essential to inform replication and scale-up. Develop and adhere to baseline and impact assessment methodologies detailed early in start-up by all project partners to ensure that project assumptions are tested and there is learning to inform replication and any justification for any escalation of the interventions by the EA and TIAs. Implement a system that documents all changes to project RM from design to start-up and during implementation to allow for the retention of institutional memory based on changes between short-term consultants and long-term staffing.
Monitoring and Evaluation	**Collection of monitoring data is important**. For example, farmers are earning more, especially with the integration of crops such as the pineapple. However, the project has not been tracking crop yield to have empirical data.
Monitoring and Evaluation	Any delays in establishing baselines for project interventions (e.g. farmer's knowledge) can limit the project's ability to establish attribution to outcomes. Given the absence of key baselines prior to interventions, other methods to assess the effectiveness of the SLM interventions for example outcome mapping and case studies should be done. For the remaining field schools pre- and post-training assessments and the tracking of participant's adoption of best practices is essential. There is also need for evaluation of constraints to adoption early in the project to guide the refinement of the SLM strategies.
	Transformative projects of this nature require well established strategic level governance arrangements. Involvement of high level stakeholders that can help with legislative, regulatory and policy level approvals and make decisions is essential

Watershed Management	Watershed management cannot be solely projectized but needs to have a long term programmatic approach given the importance and value of watersheds to the environment and people of Jamaica. Sustained action to maintain and improve watersheds and secure ecosystems health requires commitment of all stakeholders and government support for sustained financing that is complementary to any other long term financing mechanisms established.
Watershed Management	Watershed management needs to be continuous and requires: clearly defined and agreed objectives and targets; proper data to inform decisions; Better coordination and definition of roles and responsibilities of entities involved in watershed management. There is also a need for a coordinated approach to policies and how they are developed and how they are used to influence decisions.
Watershed Management	PES, as a mechanism for sustainable financing for watershed management, does not constitute a short-term commitment, but requires serious ownership (staff time, training etc.) and joint effort by a diverse and coordinated set of stakeholders, working at the legislative, policy, planning, regulatory, implementation and monitoring levels for seamless execution. Due to the many facets associated with a PES; it can prove difficult to implement. Project partners must consider critical elements of land use, land tenure, contracts etc. for which actions can be bureaucratic and as such the transaction costs are high. • For continuity, there must be a clear roadmap and plan, with roles and responsibilities of partner agencies well defined, a framework and adequate infrastructure and a robust Secretariat to coordinate and manage the initiative. • Having a high-level champion that understands clearly, is at a sufficiently high level and can pull the pieces together, and holds entities accountable, is necessary to promote buy-in and advance implementation. • Donor support for a high-level knowledge exchange will improve understanding of the requirements at the Head of Agency and political directorate levels. • Public education and sensitization will also be critical.
Watershed Management	**The Y-H Project experience in its attempt to establish sustainable financing mechanism for IWRM using the PES, underscores the need for continued investment in sustainable financing mechanisms that create incentives for the range of stakeholders.**
Watershed Management	Financing for watershed management requires the buy-in of key stakeholders, including community persons and those expected to pay for services. Public awareness, engagement and sensitization of these stakeholders from early in implementation is critical.
Watershed Management	A level of coordination is required for watershed management projects that is not the norm for partner agencies. This is elaborated with specific mechanisms and joined up components that allow for the close working arrangements among TIAs and a recognition that there is a high level of dependency between project activities.
Watershed Management	Engagement of local NGOs and CBOs, including their participation in project planning and oversight as well as implementation on the ground, is important for watershed management. Provision must be made in the project budget and requirements to enable their effective participation
Watershed Management	There is a need for consideration of the broader factors that impact the beneficiaries that may be outside of the project's scope – but will none the less influence its key outcomes. For example, based on the finding of the qualitative programmes there were several other concerns – that impact on their lives and livelihoods e.g. roads and economic/ income generating activities. So, for a broader programme such as the PES to be successful the project must consider the non-project related priorities of the stakeholders / farmers. These must be accounted for in the project's strategies. **<u>There is a cost to securing the application of innovations</u>** – i.e. in moving innovation from the FFS to the fields, costs are involved, so there may be need to consider these costs. The farmer is more likely to take on the practice when application is supported --- so the adoption to the learning to the farmer's holding may be hampered. i.e. not only providing know how, but also the ability to apply the know-how.
Watershed Management	Consider tenure when making infrastructure investment on third party lands.

Watershed Management	The Y-H Project demonstrated that no single entity has sufficient resources to implement multifaceted projects. But there is a great opportunity to collaborate; strengthen linkages and improve inter-government working relationships to achieve set goals. MOUs work best where mutual benefit can be derived.
Watershed Management	Ongoing dialogue and communication is necessary to build awareness and commitment to watershed management initiatives. This is also important for building trust and willingness to share. The EA must interface with stakeholders regularly to provide assurance and address issues as they arise.
Watershed Management	A multi-agency project is reflective of true partnership, which needs to be identified in the structures and processes utilized. This approach requires a shift from top-down to more inclusive, participatory engagement of key partners, built on trust. MOUs/PAs serve as a visible commitment by stakeholders but for execution, use of contracts is more effective and allows for flexibility in the use of individual partner established processes for execution.
Watershed Management	Engagement of local NGOs and CBOs, including their participation in project planning and oversight as well as implementation on the ground, is important for watershed management. Provision must be made in the project budget and requirements to enable their effective participation.
Watershed Management	Unless activities are owned by project partner agencies, mainstreamed into their plans and programmes for which they are accountable to a Minister, other hierarchy of Government, Ministry of Finance or the donor, it will not get the level of buy-in and ownership required nor will it become a principal area of focus. Furthermore, failure to give agencies control over their spend for activities for which they are responsible, also results in the activities being afforded lower priority.

W. Annex 23: Recommendations for Future Projects

Recommendations for Future Project Implementation Improvements

1. Re-engage stakeholders in project planning at start-up, ensuring there is a common understanding of the project logic, the results framework and all supporting elements of the project. This captures any changes to project assumptions made at design and allow for adjustments that reflect these changes.
2. Conduct initial and ongoing stakeholder analysis to identify any stakeholders to be engaged in the project, if not yet involved (or changes in interest and involvement for those already engaged). Follow-up on the findings by updating project plans, incorporating targeted strategies to build wider stakeholder awareness of the project and its activities and secure adequate and appropriate engagement from design to project closure.
3. Ensure the project manager and all supporting staff within the EA, and the PEU staff has the requisite project management training and/or experience, to lead and participate in the planning, implementation and management of project activities to meet development, donor and GOJ requirements in line with key project documents, including the FA, PP, M&E Plan and RMP, and are guided by the technical studies completed
4. Ensure the EA's project oversight arrangements include personnel with sufficient seniority to a) guide PM and support staff in areas such as scheduling and prioritization of activities and troubleshooting; to ensure timely response to project needs and b) provide representation on the high level PSC that operates at the strategic level, with a focus on planning, monitoring and decision making; escalating issues that require even higher level intervention.
5. Support future sustainability of the project-supported watershed level interventions by adoption community group strengthening and formation as a core activity; executed in partnership with the relevant government agencies, NGOs and CBOs and residents.
6. Ensure that the project consider and plan for capacity development needs (technical and operational) of project staff and implementing partners that are essential for implementation and future sustainability; and ensure there is a clear plan to address those needs.
7. Ensure that TIAs who are the face of the project in the WMUs have the flexibility to develop and customise "best fit" programmes that meet beneficiary priorities and needs at mobilization. Ensure commitments made to beneficiaries are delivered in a timely manner so as not to compromise the ability of the technical officers to do their jobs.
8. Adopt a participatory planning approach in the development of annual project plans.
9. Adjust the framework for farmer involvement in a future PES to consider a group approach to the application of SLM.
10. Integrate incentives and penalties clauses into consultants' agreements / contracts to address issues with quality and timeliness in the submission of deliverables.
11. Give due consideration to the development context of the country and sector of focus, including current capacity and institutional context of the EA and key implementing agencies, when developing the various activities and expected timeframes that will contribute to achieving the PDO.
12. Provide strong support to government partner agencies in implementation, for complex projects, with novel strategies and initiatives. Ensure that during design key agencies are

intimately involved in all steps for their full appreciation, agreement and ownership. Build in a one-year pre-implementation phase where key PEU staff are on-boarded; pre-procurement activities undertaken e.g. TOR & RFP development; all design documents are available and accessible and there is opportunity for communication with design consultants; the M&E plan is developed and any baselines outstanding assessed and established.

13. Ensure than design support (consultants) includes a good blend of technical expertise and local context, utilizing a consulting firm that provides all the required expertise and skills to the project's design that allows for a more seamless design process, with expanded multi-level quality control system, internally by the firm and by the donor/administrator and host country government.
14. Incorporate a pre-implementation phase in the project cycle (6-12 month) to allow for: a) EA preparation and internalization of key project documents including the Financing Agreement and the Project Document, b) Finalization of the Project Operations Manual, other preparatory documents, c) continue to engage key partners to keep the momentum and allow for preparation for implementation, including sensitization of key partners on key implementation documents and their contents and use, d) adequate time for consultations and further engagement of key partners around programme planning and mainstreaming of agreed activities, e) pre-procurement and M&E actions f) on-boarding of key staff and any capacity strengthening to improve readiness for implementation.
15. Build capacity for TOR development within the project and its partners to ensure deliverable scheduling is realistic and aligned with the consultancy's implementation approach; integrating needed adjustments in the preparation of consultant’s agreements.
16. Create mechanisms for greater donor interface with the EA and TIAs through structures such as the PSC, especially at start-up to ensure administrative and operational systems are in place, monitoring tools and triggers are defined and understood and implementation challenges are identified and needed interventions made.
17. Continue to use mechanisms that transfer funds for the implementation of specific project components to the technical implementing agency to improve implementation efficiency and prevent unnecessary delays
18. Negotiate from the design phase, how the project interacts with the units, departments and branches of the EA and TIAs during and after EOP - to ensure a smooth transition of critical elements needed to advance sustainability and any resources (human or physical) are defined and costs allocated to support this outcome.
19. Ensure project Partner are assessed and a plan for M&E capacity building integrated to secure the project's ability to assess impact and the efficacy of interventions - especially where new methods and approached (PES, FFS) are being tested with a view for upscaling and replication
20. Integrate a system of financial and technical triggers that require EA and Donor interventions that are used as ongoing metric and warnings that highlight implementation deficiencies.
21. Develop and maintain good coordination and communication between the IDB and host government partners, ensuring that there is constructive feedback on project status, common understanding of issues and challenges and opportunities to address these. Use tools and monitoring indices common to all parties to ensure that all data and information collected, stored, analysed and disseminated result in common understanding of project status and necessary action.