**Trinidad and Tobago**

**FLOOD ALLEVIATION AND DRAINAGE PROGRAM (TT-L1036)**

**monitoring and evaluation plan**

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**Abbreviations**

|  |  |
| --- | --- |
| AOP | Annual Operation Plan |
| CS | Country Strategy |
| DD | Drainage Division |
| EA | Executing Agency |
| EMA | Environmental Management Authority |
| ESA | Environmental and Social Analysis |
| ESMP | Environmental and Social Management Plan |
| ESMR | Environmental and Social Management Report |
| GCI | General Capital Increase |
| GORTT | Government of the Republic of Trinidad and Tobago |
| IDB | Inter-American Development Bank |
| ICAS | Institutional Capacity Assessment System |
| MEWR | Ministry of Environment and Water Resources |
| OC | Ordinary Capital |
| OM | Operations manual |
| O&M | Operation and Maintenance |
| PEU | Project Execution Unit |
| PMR | Progress Monitoring Report |
| POD | Proposal for Operation Development |
| POSC | Port of Spain City Corporation |
| SSF | Safeguard and Screening Form for Screening and Classification of Projects |
| TC | Technical Cooperation |
| T&T | Trinidad and Tobago |

1. Introduction
   1. The general objective of the operation is to minimize impacts from the lack of, or insufficient, urban drainage infrastructure in critical areas of the city of POS. Specifically, the program will support the improvement of catchment management through the implementation of drainage infrastructure, improvement of mobility of the population within the central area of POS through a linear park, and institutional strengthening. As indicated in the Proposal for Operation Development (POD), MEWR will be the Executing Agency for the Program with broad oversight responsibility for all matters related to the Program, and with direct responsibility for the administration of resources and the procurement processes. Program monitoring will be based on the Results Framework, the Progress Monitoring Report (PMR), the Procurement Plan, and the AOP. MEWR will submit two semi-annual progress reports throughout program execution, within 60 days following the end of each semester, as described below.
   2. Program performance will be assessed according to the indicators of the Results Matrix. The Executing Agency will present the Bank for its non-objection: (i) a midterm evaluation at the end of 30 months from the date of the signature of the loan contract or after 60% commitment of the resources, whichever comes first, and (ii) a final evaluation of the program, after 90% of loan resources have been committed. The final evaluation will include an ex-post economic evaluation of the program as well as reporting on environmental and social issues and on safeguards compliance. All the evaluations will be carried out by external independent consultants.
2. Monitoring
3. A. Indicators
   1. Table 1 below presents the indicators that will be monitored on a semi-annual basis. Details on the progress of each indicator will be provided in the Semi-annual Progress Reports. The data will feed the Progress Monitoring Report (PMR) system, which will be also updated every six months. The PMR will incorporate the results framework, as well as the risk mitigation matrices and the DEM in order to enable project teams to monitor the outputs and outcomes of the project, and their delivery in terms of both cost and time. The PMR will be updated twice a year in September and in March to facilitate reporting on the links between project outputs and outcomes, outcomes and priorities in country strategies.

**Table 1 Monitoring Indicators**

|  |  |  |
| --- | --- | --- |
| Output Indicator | Frequency of Measurement | Source of Verification |
| (P 1) Detailed designs prepared for South Quay (design) | Semi-annual | Verification: Design approvals by Drainage Division (DD) |
| (P 1 to 8) Tender documents and cost estimates prepared (tender docs) | Semi-annual | Verification: Issuance of call for tender by the MEWR/ PEU |
| (P 1) Storm drainage network for South Quay rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB |
| (P 2) Storm drainage network for SW QP Savannah rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 2) New water and sediment detention reservoir (reservoir) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 3) Storm drainage network for Woodbrook West rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 3) New water and sediment detention reservoir (reservoir) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 4) Storm drainage network for Abattoir Rd. rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P4) Set of equipment acquired (equipment) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 5) Storm drainage network for St. Vincent St. rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 6) Storm drainage network for Adam Smith rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 6) New water and sediment detention reservoir (reservoir) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| (P 7) Storm drainage network for Sackville rehabilitated (km) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |
| ( P 8) Increasing cross section of St. Ann’s River at Eastern Main Road (bridge) | Semi-annual | Verification: completion certificate signed by construction supervisor and MEWR/ PEU. Semi-annual reports to IDB. |

1. B. Data Collection and Instruments
   1. All the indicators for the proposed interventions are and will be based on information collected directly by MEWR/PEU and recorded within the internal administrative record system of the MEWR. Given the incipient nature of the MEWR, the Program will finance the establishment of an adequate data recording and control system.
   2. MEWR/PEU will also be responsible for the process of systematization of the information obtained from the semi-annual reviews (semi-annual progress report), the mid-term evaluation and the final evaluation, with the overarching objective to support: (i) the preparation of the Project Completion Report (which will be presented as Expanded Performance Monitoring Report, or XPMR ), and (ii) the preparation of any documents requested by the Office of Evaluation and Oversight (OVE), in line with the IDB policy GN-2254-5.
   3. All the outputs and outcomes indicators will be measured directly. At times, the PEU personnel will receive external support to carry out the measurements (e.g., in the collection of the environmental data, as described below). Measures and estimates will be compared with the expected outputs and outcomes presented in the Results Matrix. MEWR/ PEU will submit two semi-annual progress reports throughout program execution, within 60 days following the end of each semester, as described below.
   4. It was agreed to use the Results Matrix and the activities defined in the Performance Monitoring Report (PMR) as the principal elements for monitoring the operation. This means that program monitoring will be based on the Results Matrix (that details also the means of verification), the PMR, and the Annual Operation Plan (AOP).
   5. Given the limited capacity of PEU to undertake the monitoring of work items identified in the ESMP, with the assistance of the DD, the resources of the Environmental Unit from the Ministry of Works and Infrastructure (MWI), a unit that would have been utilized prior to DD’s detachment from the MWI, will be utilized. Alternatively, executing these work items would be the responsibility of an Environmental Specialist resident in the DD in the MEWR.
2. C. Reporting monitoring results
   1. Besides the Annual Operating Plans (AOP) and the Annual Procurement Plans (see Summary Implementation Arrangements in the POD), the MEWR/ PEU will submit two semi-annual progress reports throughout the life of the project execution, within 60 days after the end of the calendar year or half year. These reports will contain, at a minimum, the following elements: (i) descriptions of the executed activities per component; (ii) accounts of the contractors’, consultants’ and the supervision firm’s performances; (iii) description of the procurement processes carried out during the reported period and any update to the procurement plan; (iv) updated schedule of physical progress and disbursements; (v) level of compliance with the performance indicators, according to the PMR system; (vi) review of critical determinants of the socioeconomic feasibility of the project, particularly actual investments costs; (vii) progress with respect to the implementation and execution of environmental audits, including timeline, results and implemented measures to comply with the Environmental and Social Management Report (ESMR); (viii) description of the elements that are affecting program implementation, and identification and proposal of corrective measures; (ix) identification of new risks / events that may potentially affect the future implementation of the program, and update of the Matrices produced within the Project Risk Management process; (x) execution plan to be completed in the following two six month periods; (xi) maintenance plan for the following two six month periods; (xii) a summarized project financial statement, and (xiii) the estimated cash flow for the next two six month periods.
   2. As mentioned above, the semi-annual progress reports will be structured to facilitate easy updates of the PMR system (based on the Result Matrix). A standard template has been developed in this sense indicating indicators and milestones for the programs outputs, outcomes and impacts.
   3. Financial accounting and technical inspection visits will be conducted by the IDB based on the initial risk assessment and changes thereto during execution, to monitor relevant technical, operational, and financial aspects of the Project. Inspection visits reports will be prepared at least twice per year. Administration missions will be conducted by the IDB whenever the need arises.
   4. The chronogram at the end of this document presents the information over the dates proposed for the publications of the results.
3. D. Financial Auditing
   1. From a financial management perspective:
      1. an annual financial audit report of the program is to be submitted by MEWR within 120 days of the end of each calendar year (beginning with the year in which the program was made effective);
      2. a final financial audit report of the program is to be submitted by MEWR within 120 days after the date of the last disbursement.
      3. The Terms of Reference of the appointed external auditor will also include quarterly ex-post reviews of disbursements processed, the report on which will be submitted within twenty (20) days of the end of each calendar quarter.
   2. The external audits will be performed by a firm of independent auditors acceptable to the Bank or by the Auditor General of Trinidad and Tobago, where appoint has been accepted, and using terms of reference previously approved by the Bank. The cost of the audits will be financed with program resources.
4. E. Monitoring Coordination, Work Plan and Budget
   1. As indicated above and in the Proposal for Operation Development (POD), MEWR/ PEU will be in charge of monitoring program performance and progress throughout execution. Overall, the PEU will be responsible for developing the system for gathering and maintaining the data related to the different indicators included in the Results Matrix, as well as for collecting the retaining updated information on the performance indicators and implementation plans. Acknowledging the need to ensure proper internal communication, appropriate staff will be designated by the PEU for the execution of the program. The PEU will include a Program Manager, two engineers, a financial officer, an accounting officer, a procurement officer and a specialist in planning and control that will be responsible for the monitoring of the Program. Accounting and financial monitoring and reporting will be undertaken by the MEWR, through the PEU. The PEU will also include a Legal Officer. This core group will also include a specialist in planning and control who will be responsible to compile information from the other members of the working group and closely follow the monitoring of the program. The Program Manager through will be responsible for monitoring progress against agreed benchmarks, assessing the continued viability of the program and present monitoring reports to the IDB every six months. Capacity building activities to be financed through loan resources will include: training on environmental and social safeguards, water quality monitoring procedures, and data collection for program monitoring.
   2. Table 2 presents the program monitoring timeframe, budget allocated for each main activity and source of funding. The first item, “General data collection and monitoring activities”, was assigned a budget of US$15,000, and will cover those general expenses that the executing agency will have to bear to monitor program execution that are not covered by other budget lines.

**Table 2 Monitoring Work Plan**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Key Monitoring Activities/Products per Activity | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Responsible | Costs (US$) | Funding |
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |  |  |  |
| Preparation of Operations Manual | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MEWR/ PEU | 10,000 | Loan resources (included in item “Program Monitoring”) |
| General data collection and monitoring activities | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | MEWR/ PEU | 15,000 | Loan resources (included in item “Program Monitoring”) |
| Semi-annual progress report | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | MEWR/ PEU | 20,000 | Loan resources (included in item “Program Management”) |
| Inspection visits |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X |  | X | IDB Program Team Leader | 10,000 | Yearly assigned transactional budget (staff in country) |
| Annual financial audit report |  |  |  |  | X |  |  |  | X |  |  |  | X |  |  |  | X |  |  |  | Firm of independent auditors acceptable to the Bank, contracted by MEWR | 120,000 | Loan resources (included in item “Program Auditing”) |
| Final financial audit report |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | Firm of independent auditors acceptable to the Bank, contracted by MEWR | 30,000 | Loan resources (included in item “Program Auditing”) |

1. Evaluation
2. A. Main Evaluation Questions
   1. The main goal of this program evaluation is to appreciate the extent to which the program objectives were achieved as a function of what had been established in the result matrix. In order to do so, a comprehensive assessment of the progress level towards the objectives will be conducted. As indicated above an ex-post socioeconomic evaluation will assess if the costs and benefits identified in the ex-ante evaluation were materialized. The main evaluation questions for this operation will thus be:
      1. did the construction of the flood alleviation and drainage works reduce the incidence of flooding in PoS?
      2. were the institutional strengthening activities effective in achieving its objective?
   2. Answering these questions is crucial for the following reasons:
      1. to determine if the direction the GORTT has taken to address the issue of flood alleviation is efficient and cost effective;
      2. to test the plan/ arrangement for commuters in PoS.
   3. The lessons learned that will stem from this exercise will be used in the preparation of subsequent phases and future interventions.
3. B. Existing Knowledge (previous evaluations, ex ante economic analysis)
   1. An ex-ante cost-benefit analysis for the flood alleviation component was performed (Component 1). The project is economically viable, showing an Economic Rate of Return of 26% and an Economic Net Present Value of US$53.9 million. The benefits of the project are related to two economic impacts that are independent of each other: (i) a reduction of the cost related with the traffic congestion and hazards; and (ii) the improvement of real estate values. The benefit related to traffic delay costs were estimated using data on duration of traffic delays, number of people affected, and value of time. For the improvement of real estate values, a Hedonic Price (HP) model was used for structures located on the project impact area. The analysis was complemented by appropriate sensitivity and risk assessments that confirmed the robustness of the project. For details please see the Socioeconomic Annex. The linear park project will be evaluated from an economic perspective once the technical studies are concluded.
4. C. Key Outcome Indicators
   1. The key outcome indicators of the program are presented in the second part of Table 3 below.

**Table 3 Key Impact/Results Indicators**

|  |  |  |  |
| --- | --- | --- | --- |
| Indicator | Formula / Definition | Frequency of Measurement | Source |
| Area protected from flooding (ha) | Sum of areas benefitting from flood alleviation works | Annual | Semi-annual reports to IDB |
| Persons affected by floods (Person) | Sum of persons benefitting from less traffic interruptions due to flood events | Annual | Semi-annual reports to IDB. |
| Percentage of physical assets functioning according to design specification (%) | Fraction of assets contributing positively to flood alleviation | Annual | Semi-annual reports to IDB |
| Economic damages caused by rainfall events ($) |  | Annual | Semi-annual report to IDB. |
| Authority for drainage operational (authority) | Authority is in place and functioning | Annual | Semi-annual report to IDB. |
| Systems designed, implemented, operating and maintained according to social and environmental specifications (system) |  | Annual | Semi-annual report to IDB |
| Systems operating and maintained according to design specifications (% system) |  | Annual | Semi-annual report to IDB |
| Population covered by the dissemination campaign (%) |  | Annual | Semi-annual report to IDB |

1. D. Evaluation Methodology
   1. An ex-post economic evaluation will be carried out to measure the changes occurred in key variables before and after the proposed interventions have taken place.
2. E. Technical Aspects of Selected Methodology

**Data Collection**

* 1. The nature of HP method invalidates the typical ex-post evaluation that replicates the ex-ante analysis since the time it will take for properties values to increase as a result of the project implementation exceed the timeframe of the ex post evaluation. Regarding the traffic delay avoidance benefits, those will be re-estimated after the project is implemented using updated traffic data. Therefore, in this case the ex-post economic evaluation will include the comparison between the executed (ex-post) investments and operation and maintenance costs and the project benefits, the latter estimated using the original HP model and updated traffic cost statistics. This evaluation will be carried out once 90% of the program resources have been committed.

1. F. Complementary Evaluation
   1. The final and ex-post economic evaluation will be complemented by a mid-term and a final qualitative progress evaluation. The purpose of these complementary evaluations is not only to capture the degree of attainment of program objectives in relation to plans and reasons for any variances, but also to appreciate the main bottlenecks encountered during execution.
   2. At the end of 30 months from the date of the loan contract or after 50% commitment of the resources, whichever comes first, this mid-term evaluation will take place with the support of an external consultant who will focus on, among other things:
      1. level of progress in attaining the program’s objectives stated in the Results Framework;
      2. level of acceptance of procedures developed under the program, including environmental and social procedures and compliances (e.g. implementation of the ESMP, health and safety, number of accidents, resolved complains, etc.);
      3. degree of effectiveness of the internal and the Bank’s monitoring and supervision system.
   3. The final evaluation, to be carried out also with the help of an external consultant, is to take place after 90% of loan resources have been committed. The evaluation will assess:
      1. degree of attainment of program objectives in relation to plans and reasons for any variances;
      2. the organization established for program execution;
      3. implementation and acceptance of procedures and systems developed through the program, including environmental and social procedures and compliances (e.g. implementation of the ESMP, health and safety, number of accidents, resolved complains, etc.);
      4. sustainability of the activities funded under the program, paying special attention to the MEWR Operation and Maintenance capacity developed through the training programs and the sustainability of works financed;
      5. lessons learned that could be applied to future projects.
   4. The ex-post economic evaluation described above will be performed as part of this final evaluation.
2. G. Reporting Results
   1. The information included in the final complementary evaluation and in the ex-post economic evaluation will be used as inputs to prepare the XPMR. The mechanisms and instruments to report program evaluation results are those listed above, and in particular the PMR system (with the semi-annual updates), paying particular attention to the change in the risk analysis and the conditions recorded at program inception. The XPMR, which replaces the Project Completion Report (PCR), compares actual results achieved with the expected results presented at entry in the Development Effectiveness Matrix (DEM), which includes the recalculation of the DEM score. It will report on: (i) time and cost of outputs achieved from the last PMR; (ii) on results achieved and evaluation methods used; and (iii) Bank’s performance during the life of the project. The exercise will be used to improve management for results, learning and greater accountability.
   2. All the evaluation reports are expected to be available within 6 months after completion. The reports will benefit the Bank as well as the borrower and the executing agency.
3. H. Evaluation Coordination, Work Plan and Budget
   1. All the evaluations (mid-term and final, which will include the ex-post economic evaluation) will be carried out by an external independent consultant. The contracting will be managed by the MEWR /PEU, which will prepared the Terms of Reference and supervise the consultant with the support of the Bank, and will be financed through loan resources.
   2. The final evaluation plan will be revised by both MEWR and the IDB team, in order to ensure the accuracy of the information and to ensure that the most relevant aspects of the program are analyzed.
   3. The evaluation timeframe, budget allocated for each main activity and source of funding are presented in Table 5 below.

**Table 5 Evaluation Work Plan**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Key Evaluation Activities/Products per Activity | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Responsible | Costs (US$) | Funding |
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |  |  |  |
| *Mid-Term Evaluation* | | | | | | | | | | | | | | | | | | | | | | | |
| Consultant contracted for mid-term (complementary) evaluation |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  | MEWR/ PEU | 30,000  ? | Loan resources (included in the budget line “Program Evaluation”) |
| Mid-term evaluation completion |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |  |  |  | Consultant contracted by MEWR |
| *Ex-post economic and final evaluation* | | | | | | | | | | | | | | | | | | | | | | | |
| Consultant contracted for final and ex-post evaluation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  | MEWR/ PEU | 55,000  ? | Loan resources (included in the budget line “Program Evaluation”) |
| Data collected (updated traffic costs and investment costs ex post) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Data analysis and report preparation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  | Consultant contracted by MEWR |
| Final evaluation completion |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  | Consultant contracted by MEWR |

As explained above, the ex-post economic evaluation will be part of the final evaluation.