

Building Water Resilience in Bogotá and the Region

ANNEX 11 MONITORING AND EVALUATION PLAN

JUNE 2026



Annex 11 Monitoring and evaluation plan

Project: Building Water Resilience in Bogotá and the Region

Monitoring				
Data/Source	Collection Tool	Frequency	Indicator	Indicative Budget (per year) (USD)
Project reports Base line and endline surveys	Document review GIS data Government data records Baseline study	Annually	Core 2: Direct and indirect beneficiaries reached (total project beneficiaries)	\$12,000.00
Project reports Base line and endline surveys	Gender disaggregated household survey	Annually	Supplementary 2.1: Beneficiaries (female/male) adopting improved and/or new climate-resilient livelihood options	\$9,000.00
Reports from municipal water supply systems, project reports	Document review Government data records	Annually	Supplementary 2.3: Beneficiaries (female/male) with more climate-resilient water security	\$4,000.00
Project reports Satellite imagery	GIS data Document review	Annually	Core 4: Hectares of natural resources brought under improved low-emission and/or climate-resilient management practice	\$10,000.00
Project reports Satellite imagery	GIS data Document review Field data	Annually	Supplementary 4.1: Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal marine areas brought under restoration and/or improved ecosystems	\$8,000.00
Total amount per year				\$43,000.00
Total amount project implementation (5 years)				\$215,000.00

Enabling environment indicators				
Data/Source	Collection Tool	Frequency	Indicator	Indicative Budget (unitary price) (USD)
Policy documents Regulations Meeting minutes	Key informant interviews Government records Document review	At mid-term (year 3) & final (year 5)	Core Indicator 5: Degree to which GCF investments contribute to strengthening institutional and regulatory frameworks for low emission climate-resilient development pathways in a country-driven manner	\$12,500.00
Project technical reports Tech deployment records	Key informant interviews Document review Survey/questionnaire	At mid-term (year 3) & final (year 5)	Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation	\$9,000.00
Market/finance data Private sector agreements	Key informant interviews Document review Survey/questionnaire	Final	Core indicator 7: Degree to which GCF Investments contribute to market development/transformation at the sectoral, local, or national level	\$18,000.00
Project technical report Knowledge products Training records Learning events	Document review	Annually	Core indicator 8: Degree to which GCF investments contribute to effective knowledge generation and learning processes, and use of good practices, methodologies and standards	\$4,800.00
Total amount per one execution				\$44,300.00
Total amount project implementation (5 years)				\$85,000.00

Project specific indicators (outcomes and outputs)				
Data/Source	Collection Tool	Frequency	Indicator	Indicative Budget (per year) (USD)
Hydrological processes ¹	Instruments to collect necessary field data	Once	Outcome 1. Volume of reduced/avoided runoff attributable to project supported NbS in the prioritized watersheds	\$254,523.00 ²
Project geodatabase Model outputs Monitoring plots data Hydrological processes	Collection of necessary field data on hydrological processes	Annually		\$8,725.00
Project geodatabase Conservation agreement documents	Field visits GIS data Document review	Annually	Output 1.1 Strategic High Andean ecosystems restored and conserved to yield hydrological benefits	\$6,000.00
Project technical reports Project geodatabase	Field visits GIS data Document review	Annually	Output 1.2 Number of farms adopting climate-resilient, water-friendly production systems (e.g. agroecological, silvopastoral, efficient water use) in prioritized watersheds	\$8,000.00
Private sector funding agreements	Document review	Annually	Outcome 2. Volume of private finance committed to and disbursed for water investments in the Bogotá-Region (USD/year)	\$5,000.00
EAAB Project technical reports EAAB tariff documentation	Document review Government data/records Key informant interviews	Annually	Output 2.1 Status of operationalization of environmental investment component in the water tariff	\$4,000.00
One time investment				\$254,523.00
Total amount per year				\$31,725.00
Total amount project implementation (5 years)				\$413,148.00

¹ For details see the Methodological Note at the end of the document

² Equipment.

Project co-benefit indicators				
Data/Source	Collection Tool	Frequency	Indicator	Indicative Budget (unitary price) (USD)
Biodiversity plots Monitoring Project geodatabase Satellite imagery	Field data Camera traps GIS data	Year 2 and 5	Number of hectares of restored and conserved habitats that enhance ecological connectivity and secure migratory pathways for endemic flora and fauna, evidenced by increased presence of stable populations of target endemic and migratory species in monitoring sites	\$17,500.00
Water treatment operational data analysis (energy, chemicals, operation and maintenance) Project geodatabase	Public expenditure reporting Government data/records GIS data	Baseline and year 5	Annual value of avoided water treatment costs at drinking water treatment plants, attributable to the implementation of NbS measures	\$12,500.00
Allometric equations Soil sampling Carbon modelling Satellite imagery	Field data GIS data Document review	Baseline and year 5	Total incremental carbon sequestered in biomass and soils attributable to project-supported restoration and conservation of high Andean forests, páramos and wetlands	\$17,500.00
Total amount per one execution				\$47,500.00
Total amount project implementation (5 years)				\$95,000.00

Evaluation			
Type	Timing	Independent/Self-evaluation	Indicative Budget (USD)
<i>Process</i>	Year 3 (Mid-term evaluation)	Independent	\$45,000.00
<i>Summative</i>	Year 5 (Final evaluation)	Independent	\$60,000.00
<i>Ex-poste</i>	Year 7 (desk based)	Self-Assessment	\$10,000.00
Total amount			\$115,000.00

Programme interim and final evaluation reports will be submitted to the GCF according to the schedule in the funded activity agreement (FAA). In all cases, the minimum thoroughness regarding evaluation methodologies will consider a before-and-after comparison of indicators included in the Project. The interim and final evaluations are considered critical for informing on Project results and lessons learnt.

Category	Total amount per year/unitary (USD)	Total amount project (USD)
Monitoring	\$43,000.00	\$215,000.00
Enabling environment	\$44,300.00	\$85,000.00
Project specific indicators (project outcomes and outputs)	\$31,725.00	\$413,148.00
Project co-benefit indicators	\$47,500.00	\$95,000.00
Evaluation	-	\$115,000.00
Total amount M&E		\$923,148.00

The budgeted amounts in the table above consider the entire Project.

Methodological Note – Hydrological Monitoring System

The proposed monitoring plan for the indicator: % reduced/avoided runoff attributable to project supported NbS in the prioritized watersheds, represents a robust, science-based approach necessary to ensure credible estimation, validation, and reporting of hydrological impacts and volumetric water benefits. However, its implementation is inherently cost-intensive due to the combination of specialized instrumentation, field deployment requirements, long-term data collection, and technical expertise needed to generate defensible, high-quality datasets.

1. Instrumentation and Installation Costs

The deployment of continuous monitoring equipment across twelve prioritized watersheds requires significant upfront investment. Pressure transducers, data loggers, protective casings, and mounting infrastructure must be procured for each monitoring location. Installation in stable and hydrologically representative stream cross-sections requires site assessments, engineering considerations, and, in many cases, construction of secure and durable setups to withstand floods, debris, and vandalism. Similarly, the establishment of standardized runoff plots across diverse land-use types involves earthworks, plot delineation, flow collection systems, and rainfall measurement instruments.

2. Field Data Collection and Calibration Effort

Continuous monitoring alone is insufficient without calibration. The development of reliable stage–discharge rating curves requires repeated manual discharge measurements across a range of flow conditions, including during high-flow events that are logistically challenging and safety-sensitive. This necessitates trained field teams, specialized equipment (e.g., current meters), transportation to remote sites, and repeated site visits across seasons. These calibration activities are labor-intensive and must be sustained over time to maintain data quality.

3. Operation and Maintenance in Remote Contexts

Maintaining a distributed monitoring network across multiple micro-watersheds entails ongoing operational costs. Equipment must be regularly inspected, cleaned, recalibrated, and repaired to prevent data loss or drift. In many cases, sites are in remote or difficult-to-access areas, increasing travel time, logistical complexity, and associated costs. Additionally, risks of equipment damage due to extreme weather, sedimentation, or theft necessitate contingencies.

4. Data Management, Quality Assurance, and Analysis

The generation of high-frequency hydrological data (e.g., 5–15-minute intervals) produces large datasets that require systematic storage, processing, and quality control. Skilled technical staff are needed to manage data pipelines, identify and correct anomalies, and ensure consistency across sites. The calibration and validation of ecohydrological models require advanced expertise, dedicated computing resources, and iterative analysis to reduce uncertainty and ensure defensible outputs.

5. Capturing Variability and Ensuring Representativeness

To produce credible and scalable estimates of volumetric water benefits, monitoring must capture variability across rainfall events, seasons, land-use types, and antecedent conditions. This requires a sufficiently dense and well-distributed monitoring network (e.g., multiple runoff plots across land uses) and extended monitoring periods. The need to capture this variability significantly increases both the scale and duration of field operations.