



Government of the Co-operative  
Republic of Guyana

Ministry of Education

An integrated, accessible, and responsive EMIS that can inform education decision-making at all levels, foster accountability and lead to educational improvement



Education Management Information Systems and  
**Education Data Policy**

**11 December 2021**

*Developed with Assistance from UNESCO*

# FOREWORD

**D**ata and information are constantly needed to support informed policy and decision making. Countries worldwide have adopted and activated an Education Management and Information System (EMIS) which has provided education decision-makers and managers with clear, comprehensive, relevant and timely data and information.

In Guyana, our goal is to modernize the education system where the need to have a complete view of the systems and their components is critical for improvement and transformation. Given the great magnitude of data within our education system, an EMIS which aggregates all the necessary data into usable forms is necessary.

Traditionally, data gathering was done manually, which often involved the movement of people and paper. In this technological age, where information can be shared at the click of a button, Guyana is making that transition.

Implementing an effective EMIS requires all our schools and institutions to be connected to facilitate real-time data updates and access. Geographical and connectivity challenges of the hinterland regions continue to be a threat to the digital drive.

However, with support from sister government agencies such as the National Data Management Authority and the ICT Access and eService for Hinterland, Poor and Remote Communities Project, the digital divide is closer to being bridged, and the dream of all education stakeholders having access to the Internet is closer to being realized.

In Guyana, the EMIS will be of great benefit to the education system. It will allow for the tracking of key performance indicators of our Education Strategic Plan, a plan that was developed within the framework of Sustainable Development Goal 4. It will allow for



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balanced and inclusive education, by monitoring and providing data on children with disabilities, participation of boys and girls in education, and participation of at-risk and disadvantaged groups. Importantly, the EMIS will provide a structure for predictive analytics.

It will utilize historical and current data that identify threats and opportunities. These will inform how the education system provides for the national needs and sets the stage for education modernization.

Given this context, it is timely that the Ministry has arrived at a position where this EMIS Policy and its accompanying Master Plan were developed.

Already major steps have been made to implement specific elements and it is anticipated that this will result in improved decision making, increased efficiency, and better performance.

# ACKNOWLEDGEMENTS

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## 1 Purpose of the Policy

**T**he Education Management Information System (EMIS) Policy aims to ensure that education policy and management at all levels in Guyana are informed by the most timely, detailed, and accurate data possible to facilitate the realization of Guyana's national vision of “providing opportunities for quality, equitable education and lifelong learning for all.”

The document articulates the strategic vision, the priority areas, and the phased approach for establishing a dynamic data ecosystem that can support education sector

management at all levels (from the Ministry to classrooms) with EMIS at the centre.

The EMIS Policy will provide Guyana's overall vision in reforming how data is used to support education and the key strategies to achieve this vision.

An accompanying 5-year, rolling Master Plan will outline a phased approach to the implementation of the Policy. That Master Plan will be revised after the mid-term review according to progress in achieving the targets identified in its Results Framework.

## 2 Situating Guyana's EMIS

### 2.1 International Trends in EMIS

In the 'new normal' induced by COVID-19, the roles and responsibilities of EMIS are undergoing rapid evolution and expansion. Data is increasingly defining the global education landscape, propelled by an ever-growing desire for digitization.

Around the world, EMIS have developed from mainly administrative systems into digitized systems that can be leveraged to contextualize learning, inform policy and planning, and improve monitoring and evaluation (M&E) through the integration of data from Human Resource Information Systems (HRIS), Financial Management Information Systems (FMS), Learning Management Systems (LMS), and Student Tracking Systems (UNESCO, 2020).

Without strong data systems, both the progress and the problems of education environments cannot be seen.

The role of EMIS is to make visible all parts of an education system and make sense of their significance, their relationships with each other, and the ways they can lead to desired outcomes. EMIS should help stakeholders access accurate, aggregated data about an education system, supporting both informed decision-making and progress monitoring toward national and international objectives.

The COVID-19 pandemic put a spotlight on EMIS that exposed existing gaps in data management, and introduced novel ways of using technology to close these gaps. With this spotlight came immense pressure on EMIS to quickly advance beyond simple, statistical headcounts toward a student-focused integration of information that can offer something more to specific users. With the expansion of distance and hybrid learning programmes, EMIS in many countries were unprepared to reach beyond the walls of the school building.

In the past, the variables most affecting the success of an EMIS included: the availability of technology, the complexity of education systems, and support of planning, monitoring and evaluation, with a particular focus on accountability, learning outcomes, and SDGs.

The COVID-19 pandemic has emphasized the importance of other variables: remote learning, health, social distancing, real-time data, and learning monitoring or management.

These variables reveal that, at its core, a modern EMIS is student-centred. EMIS needs to be both bottom-up and top-down because sound data management does not only help school leaders or central officers, but everyone, including learners.

The pandemic further blurred the lines between the responsibilities of different sectors' information systems, such as health, labour market, and social security. The need for an integrated EMIS, both vertically across levels of the education system and horizontally across different education functions, departments, and sectors, is more apparent now than ever before.

In light of the lessons learned from the COVID-19 crisis, Guyana's EMIS policy must consider two categories of considerations that are crucial to creating a strong, sustainable, useful EMIS: (1) systemic considerations, which are the necessary conditions for building an enabling environment for the future EMIS and (2), the technological considerations to leverage what new technologies can offer to overcome the shortcomings of the conventional EMIS. With these two categories combined, the following six principles emerge that guide the production of Guyana's EMIS policy: connected systems, digital capability, access to external information, actionable data, engagement with the community, and security and privacy.

### 2.2 Evolution of EMIS

In Guyana, most planning, management, and administration processes are currently paper-based, including the annual school census, which forms the heart of the current EMIS. EMIS operations are coordinated by the Planning Unit of the Ministry, which has a legal mandate for statistical reporting of education data.

While full agreements exist on roles and responsibilities for collecting and disseminating education statistical data, no law or legal framework



is in place to guide EMIS operations and dissemination of education statistics produced by the Ministry.

The Education Strategic Plan (2003-2007) expanded the use of ICT in schools through the development of computer laboratories; however, such technology was mainly used to improve the quality of literacy and numeracy instruction.

To support such initiatives, TVET institutions introduced computer studies to increase the human capacity in computer technology and maintenance. The MOE's five-year strategic plan (2008-2012) renewed the emphasis on expanding ICT infrastructure and capacity, with a specific focus on teacher training and the creation of distance learning models.

Recent efforts to digitize and further develop the Guyana EMIS have included: a pilot to digitize the school census using OpenEMIS, a pilot deploying a school management information system in 55 secondary schools, the collection of student-level information in all public Nursery, Primary and Secondary schools using Microsoft 365, a pilot of Microsoft Teams in grade 7 with an intended roll-out to all grade levels, and efforts to digitize pre-service and in-service training and build associated databases containing training records.

### 2.3 Current EMIS Challenges

In the Ministry of Finance's 2019 Voluntary National Review of SDG progress, the Government identified the lack of strong data systems as a critical barrier to sustainable development. Other core challenges to meeting SDG targets comprised insufficient financing and inadequate capacity, which hinders the Government from forming policies that target the improvement of educational outcomes, and thus innovation, diversification, and productivity. Based on findings of an assessment done by Community Systems Foundation (CSF) in 2019 and consultations conducted by UNESCO in 2021, the key challenges of Guyana's EMIS can be categorized as follows:

(i) The lack of integration of datasets of various departments and levels of the administration (regional vs. national) is linked to (i) the absence of an

integrated EMIS IT ecosystem and (ii) the absence of a clear governance framework.

The annual school census data collection is not well coordinated with regional data collection and that of other national departments.

This leads to **fragmentation** and **duplication** of data sets, decreasing the usability and accessibility of both national and regional data. Data sharing and coordination mechanisms among the different MOE units and outside agencies exist but are often limited to **informal** agreements.

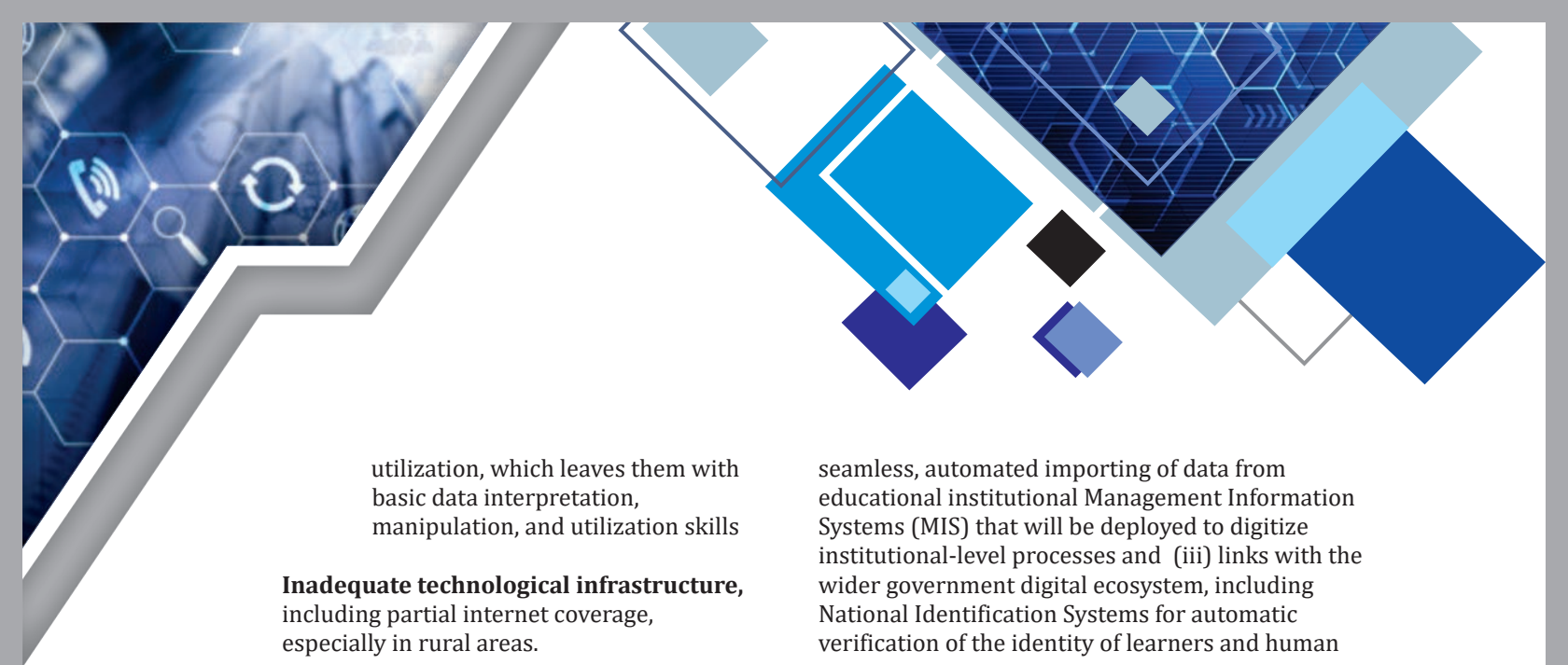
- Data remains **centralized**, hindering operational use by regional and school education stakeholders. Local authorities do not have access to education data unless it is published on the Ministry's website.

- Some of the software solutions employed do not meet required needs (e.g., software used for HR management and management of educational resources) and are **not interoperable**.

(i) **No educational institutional MIS software** solutions deployed in most educational institutions that would (i) support institution-level digitized day-to-day management, (ii) allow for the provision of real-time information services for EMIS stakeholders at all levels, and (iii) ease the data collection burden for institutions (data collection for higher levels becoming a by-product of digitized institution management).

(ii) **Insufficient utilization** of data at various levels is linked to (i) lack of user-friendly, customized information services and feedback loops provided through the EMIS to all stakeholders, (ii) lack of capacity to utilize data, and (iii) lack of data-driven culture at all levels.

- No systematic feedback is provided at the regional and educational institution level on the school census or other EMIS data.
- From a school official's perspective, EMIS generally represents a set of mandatory questionnaires, not a source of evidence/information for management
- Local and regional EMIS users receive insufficient training on data



utilization, which leaves them with basic data interpretation, manipulation, and utilization skills

**Inadequate technological infrastructure**, including partial internet coverage, especially in rural areas.

### 3 Vision for EMIS for 2026 and Beyond

The overall vision of the EMIS and Education Data Policy (hereunder referred to as “EMIS Policy”) derives from that of the ICT in Education Policy.

The ICT in Education Policy aims to develop an **“ICT empowered modern, equitable and responsive education system for the transformational development of Guyanese citizens”**. To achieve this, the ICT in Education Policy envisions putting in place a system that transforms information into a tool for educational improvement.

Under this overarching vision of integrating ICT in Education, the vision of the EMIS Policy is to have “an integrated, accessible, and responsive EMIS that can inform education decision-making at all levels and foster accountability, thereby leading to educational improvement.”

The EMIS ecosystem in Guyana will be an **integrated** information system in so far as it: (i) integrates all relevant information on educational institutions, students and learning, human resources, buildings and equipment, and digital content, as well as on sector strategic management processes across various administrative levels and departments, (ii) enables

seamless, automated importing of data from educational institutional Management Information Systems (MIS) that will be deployed to digitize institutional-level processes and (iii) links with the wider government digital ecosystem, including National Identification Systems for automatic verification of the identity of learners and human resources.

The integrated EMIS ecosystem will streamline data collection practices across the education system to prevent duplication of information across data collection systems. It will digitize and decentralize data entry operations to improve efficiency and data quality.

The EMIS coverage will be sector-wide, covering all education levels (including non-formal education) and public and private institutions.

The EMIS ecosystem will be accessible and responsive to users and their varying needs by providing useful information services to all stakeholders, including students, parents, educators and principals, sector managers, and the wider public, notably through tailored portals.

Information services should be tailored to provide accurate, timely, and easy to interpret information; serving EMIS stakeholders, disaggregated at different levels (national, regional, district/supervision cluster, school, section, class, student-level) by gender and ethnicity, highlighting inequities and showing trends over time.

The integrated, accessible, and responsive EMIS ecosystem will be a tool to digitize and support both (i) day-to-day operations at all levels and (ii) sector strategic planning and management, governance and accountability, and monitoring and evaluation.



## 4 Theory of Change

The Theory of Change underpinning the EMIS Policy, leading to the realization of the ICT in Education Policy Vision, can be articulated as below.

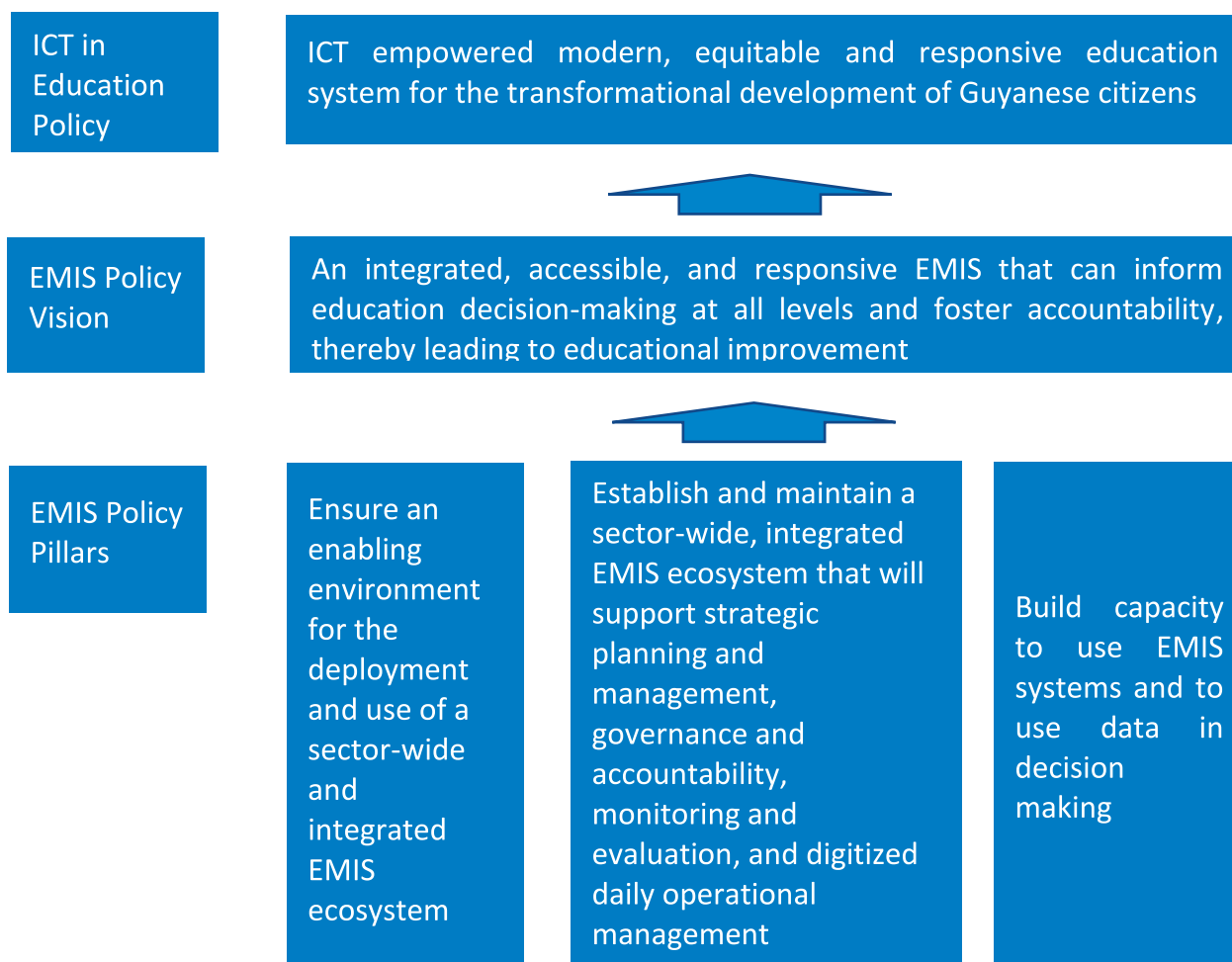
The Vision of the EMIS Policy can be realized if the below high-level policy outcomes, corresponding to the Policy Pillars presented in this document, are attained.

- An enabling environment has been created
- A sector-wide, integrated EMIS ecosystem has been established and is being maintained

that will support strategic planning and management, governance and accountability, monitoring and evaluation, and digitized daily operational management

- The capacity of users has been built to use EMIS systems and to utilize data in decision-making

**Figure 2.** EMIS Policy Theory of Change



## 5 Policy pillars and implementation strategies

### 5.1 Pillar 1: Ensure an enabling environment for the deployment and use of a sector-wide and integrated EMIS ecosystem

#### Strategy 1.1 Undertake any required updates to the organizational structure of the central MOE and the subnational administration to enable sustained deployment and use of the EMIS ecosystem

The MOE and subnational administration will restructure their services according to the EMIS Governance Framework. Human resourcing plans will be developed, and EMIS responsibilities will be included in job descriptions. Particular attention will be given to the clarification of roles and responsibilities for every stakeholder using the EMIS ecosystem, from the central to the school level.

#### Strategy 1.2 – Develop and implement frameworks and policies governing the use of EMIS and data

- Create and maintain a data management framework that establishes shared standards and nomenclatures. The DMF should cover:
  - Unique identifiers for schools, human resources, teaching positions, students, buildings, etc. The unique ID for students and personnel should be integrated with wider national identification systems and policies. Procedures, roles, and responsibilities for maintaining unique IDs will be specified in a Data Management Framework and will include verification procedures for the identity of enrolled learners and personnel on the payroll against national identification systems.

- Shared definitions of indicators and entities tracked by the EMIS (metadata)
- Definitions of all compliance reports for all departments
- Data recorded in online data collection systems
- Data collected from operational systems, including Learning Management System(s)
- Standards for relevant data from sources outside of the education sector

- Design and implement EMIS Change Management Strategy
- Develop a disaster risk recovery policy

#### Strategy 1.3 – Create policies for relevant decision-making processes that will be supported by the EMIS ecosystem

Before certain workflows can be digitized by the EMIS ecosystem, it will be necessary to develop or update relevant policies governing these processes, such as a School Inspections Policy, a School Admissions Policy, and a Human Resource Management Policy.

#### Strategy 1.4 – Through alignment with the ICT in Education Infrastructure Plan, ensure the provision of appropriate technology infrastructures: (1) internet connectivity, (2) end-user terminals, (3) data centers, and (4) cloud hosting services.

## 5.2 Pillar 2 – Establish and maintain a sector-wide, integrated EMIS ecosystem that will support strategic planning and management, governance and accountability, monitoring and evaluation, and digitized daily operational management.

### Strategy 2.1 – Establish and maintain an EMIS ecosystem to support the management of educational institutions at all levels

- Employ the EMIS ecosystem to integrate all information on educational institutions in a single master educational institution directory and to digitize management procedures. This will include, but will not be limited to:
  - the management of educational material received by schools (textbooks, teaching materials, etc.), covered by an Educational Resources Distribution System (ERDS)
  - the digitized management of school support services that will be integrated with the EMIS.
    - School health, nutrition, psychosocial support, special needs education services and interventions.
    - School monitoring and supervision through DEOs and Regional Departments
  - the digitized management of buildings, including information on location, inventory, and services (water, internet, electricity) and their maintenance.
  - the management of school improvement plans

### Strategy 2.2 – Establish and maintain an EMIS ecosystem to support the management of learners at all levels



- Employ the EMIS ecosystem to integrate all information on learners in a single master learner directory and to digitize management

procedures. Among other things, this will support:

- Real-time monitoring and analysis of learning over time.
- Establishment of an early-alert system of at-risk learners facilitating the provision of timely, personalized support.
- Tracking of learners with special educational needs.
- Use of data analytics to provide teachers with information on the learning process, learner participation, and areas of learning challenges.
- The school application and placement process
  - The school application and placement process of learners to schools shall be digitized and implement the rules developed in an Admissions Policy.
  - The appeals process to Initial placements shall be electronic only, and there shall be no parallel non-digitized processes. Provision should be made to facilitate access to the internet during the application and enrolment process.

### Strategy 2.3 Establish and maintain an EMIS ecosystem to support the management of human resources at all levels

- Employ the EMIS ecosystem to integrate all information on human resources in a single master personnel directory and to digitize management procedures. The HRMIS sub-system will support the activities of all three agencies responsible for different aspects of personnel management, the Ministry of



Education, the Teaching Service Commission (TSC), and the Public Service Commission (PSC).

- The HRMIS sub-system will cover employment processes (from the point of application), transfers between institutions, continuous professional development (CPD), and performance management/appraisal. To support professional development and performance management of personnel, the HRMIS will help to:

- Systematically identify personalized teacher in-service training needs taking advantage of formative and summative student assessment data, classroom observations, teacher assessments and appraisals, and data generated through the LMS that will be deployed for teacher development.
- Monitor teacher performance and continuous professional development.

#### **Strategy 2.4 Establish and maintain an EMIS ecosystem to support the management of finances at all levels**

- Employ the EMIS ecosystem to integrate all information on finance and digitize management procedures at all levels. The Financial Management Information sub-system (FMIS) is deployed to capture and manage all information on finance for sector management and to support management processes

- Information on the national and regional education budgets, including all payroll information, is captured in the FMIS; furthermore, all information on financial transfers to educational institutions and educational institution-level expenditures relevant to sector management is

captured and managed through the FMIS.

- The FMIS facilitates the monitoring of the budget through reporting services.
- Educational institution-level finance information is integrated with the unique master educational institution directory.

The EMIS ecosystem will provide all data and reporting services required for the budgeting process.

#### **Strategy 2.5 Establish and maintain an EMIS ecosystem to generate information on the quality of service delivery in educational institutions through a revised inspection process**

- Reform the inspection process to focus on the quality of teaching and learning and to provide comprehensive and actionable information on the quality of schools to all education stakeholders
- Digitize the inspection process and integrate it with the EMIS ecosystem

- Data from the EMIS will inform which schools are targeted for inspection and directly inform school inspection reports
- Inspection data will be integrated into the unique record of schools containing all school-level information

#### **Strategy 2.6 – Establish and maintain an EMIS ecosystem to support strategic planning and management, accountability, monitoring, and evaluation at all levels.**

- Create sub-systems and information services for sector managers to support strategic planning and policy making, governance and accountability, strategic and operational management, and monitoring, evaluation, and learning:
- A results-based management sub-system to support monitoring and evaluation of ESP, regional, and school improvement plans, projects, and interventions, and SDG4 indicators

- Dashboards and reports on management indicators, including the availability of basic inputs to learning, teacher presence, content knowledge, and pedagogical skills, availability of instructional leadership and coaching at schools, management skills and knowledge of school principals, inequities, education expenditure by category, total investment by school vs. academic results, etc.
- Dashboards and reports on student performance indicators: progression in school, completion and transition rates, student attendance, results in standardized assessments, learning context: school climate or welfare, academic results, and skills such as citizen, digital (ICILS) or socio-emotional skills.
- Dashboards on comprehensive school quality of service delivery assessments generated through the inspection process.
- Create sub-systems and information services for education institution managers,
- A sub-system to support the management of School Improvement Plans and the conduct of quarterly school assessments.
- Provide the management of educational institutions with real-time dashboards and reports on student performance indicators by learner, class, section, teacher, and trends over time, including reports on student attendance, areas of learning challenges, students at risk of dropout, etc.
- Provide education institution managers with tools that support them in their role as coaches and instructional leaders.

**Strategy 2.7 – Establish and maintain an EMIS ecosystem to enable the provision of timely information services to the public**

- Provide the public with reports on education sector performance.
- Provide communities with report cards assessing the quality of schools produced through the inspection process.
- Provide caregivers with timely access to

student performance information.

- Facilitate reporting to international agencies.

**1.1 Pillar 3: Build capacity to use EMIS systems and to use data in decision making**

**Strategy 3.1 – Develop and maintain an EMIS operational manual**

The purpose of the operational manual is to ensure the accountability of EMIS stakeholders and the timeliness of EMIS operations within a given school year, ensuring that all stakeholders are aware of what is expected from them. The manual will establish the links between the different EMIS activities/transactions in terms of responsibility, timelines, and outcomes. This normative document will be a well-formulated reference for key stakeholders using/relying on EMIS, which would describe in a structured and concise way the critical EMIS activities occurring throughout a given scholastic year in the education ministry.

These activities relate to the preparatory phase and launch of the EMIS data collection campaign, data collection at the school/education institution level, monitoring of field operations and quality control procedures, data transformation and analysis of EMIS data, and publication/release and dissemination of yearly statistical reports within and outside of the ministries.

The manual will also describe the ministry's internal workflows (1) for EMIS daily transactions occurring at school/regional/central levels and (2) for management/enhancement of statistical nomenclatures and questionnaires/data collections forms used by the EMIS based on data consumer's requirements.

**Strategy 3.2 — Develop and implement fit-for-purpose capacity development plans to use EMIS systems and data at all levels.**

Based on a capacity needs assessment through an organizational audit, recurrent capacity development plans for in-service training will be developed and implemented. The plans should reflect the various roles stakeholders will perform in the EMIS.

Capacity development plans will target the following domains:

- IT systems administration
- EMIS ecosystem software administration·  
Use of EMIS ecosystem software (features and functionalities)
- Use of EMIS data for evidence-based decision making

**Strategy 3.3 — Embed EMIS introductory courses in pre-service training programmes for MOE officers, school administrators and teachers.**

## 6 EMIS and Education Data Governance Framework

This governance framework specifies roles and responsibilities for (1) coordination and integration, collection and sharing of data; (2) data utilization in decision-making processes at all levels and by various departments; (3) quality assurance and relevance of data captured by the EMIS.

### **EMIS Governance: Roles and responsibilities**

All schools, regions, DEOs, and ministry staff have responsibilities regarding the EMIS. Responsibilities include data entry to validation and compliance verification, analysis and presentation of information, and supporting the physical infrastructure necessary for continuous operations. Training, financing, procurement, physical infrastructure operations, software support, backups, networks, and other areas also form part of the Ministry's substantial and highly consistent commitment to EMIS.

Clarity in setting roles and responsibilities ensures awareness, acknowledgement, and commitment by stakeholders to what is required of them. Clarity will prevent overlapping and duplication of effort when carrying out duties and ensure optimal return from investment in resources.

**6.1.1 Ministry of Education Senior Management**  
MOE Senior Management defines and approves

educational policies, strategies, and annual budgets for the public education system. It also has oversight over private educational institutions. Senior Management approves EMIS Policy and ensures adherence by all key role players. Senior management assigns a senior post to function as Chair of Guyana EMIS Steering Committee.

MOE Senior Management has real-time read-only access to all Guyana EMIS datasets for planning purposes via EMIS Intranet.

### **6.1.2 EMIS Steering Committee**

The EMIS Steering Committee is the key EMIS governing body in charge of implementing the EMIS policy approved by MOE Senior Management. The committee takes responsibility for the administration and management of the EMIS. It is responsible for approving all aspects of the EMIS implementation: policy, strategy, budget, quality, timeliness, and risk mitigation.


The functions of the committee are as follows:

- Responsible for implementation of the EMIS Master Plan
- Ensure that the EMIS aligns with the stakeholder requirements and education policy
- Review and approve EMIS policies, processes and standards
- Oversight of existing EMIS projects, initiatives, deliverables and status
- Assess, approve and recommend EMIS resources, budgets, priorities and proposals
- Manage EMIS issues, risks and conflicts and adjust the EMIS change management plans accordingly
- Review DMF update requests as part of a change management process
- Report on EMIS progress to the senior executive level of the ministry

The terms of reference of the EMIS Steering committee are provided as an annex to this policy.

### **6.1.3 Central Planning Unit**

The CPU is the system owner of Guyana EMIS, as delegated by the Ministry of Education's Guyana EMIS Steering Committee. The CPU defines and maintains the EMIS data management framework and reporting requirements for Guyana EMIS, incorporating in



puts from all other key role players. CPU is the custodian of the Institutional Master Directory and Learner Sub-System of Guyana EMIS. It prepares detailed plans and annual budgets for the Ministry of Education using data from Guyana EMIS.

The CPU ensures final quality control of data related to public educational institutions, learners, and learner assessments, working in partnership with DEOs. It has real-time read-only access to all Guyana EMIS datasets for planning purposes via EMIS Intranet. CPU can download encrypted, raw datasets from the EMIS for more detailed statistical analysis, planning, and research purposes.

#### **6.1.4 Management Information System (MIS) Unit**

Management Information Systems Unit is a sub-unit of the Central Planning Unit, responsible for all the technology elements that make up the EMIS. The Unit is responsible for leading the MOE in the deployment and maintenance of EMIS technological and software architectures and the provision of support and training services to EMIS end-users, as per decisions made by the EMIS Steering Committee.

#### **6.1.5 Ministry of Education Human Resource Unit**

The HR Unit manages the performance appraisal processes and the continuous professional development of all educational personnel. It will be the custodian of the EMIS HRM System. It will have full access to educational personnel records as required to implement relevant HRM functions related to teachers and public officers.

#### **6.1.6 Teaching Service Commission**

The TSC manages the recruitment and promotion of all public educators not managed by the Schools Board Secretariat. It will have full access to educational personnel records as required to implement relevant HRM functions related to teachers.

#### **6.1.7 Public Service Commission**

The PSC manages the recruitment and promotion of public officers in the Ministry of Education. It will have full access to educational personnel records to implement relevant HRM functions related to public officers.

#### **6.1.8 School Boards Secretariat**

The School Boards Secretariat manages the recruitment of teachers in schools managed by Boards. It will have full access to educational personnel records to implement relevant HRM functions related to the teachers it recruits.

#### **6.1.9 National Centre for Educational Resource Development**

NCERD is the custodian of the National Digital Content Repository, National Learning Management Systems (LMSs), and Digital Learning Platforms (DLPs). NCERD has full administrative control of the National Digital Content Repository and National LMSs and DLPs.

It has the ability to create user accounts to enable authorized users to upload content to the repository, create and run courses in LMSs/DLPs, etc.

#### **6.1.10 Caribbean Examinations Council**

CXC manages national examinations for identified grades: Caribbean Secondary Education Certificate (CSEC) and Caribbean Advanced Proficiency Examinations (CAPE).

The CXC has access to learner details as needed to administer relevant examinations. It can upload examination data into Guyana EMIS after verification of examination results.



#### **6.1.11 Regions and DEOs**

Regions and DEOs conduct educational institution inspections and submit reports/data through the EMIS. Regions and DEOs have the responsibility to develop Regional Improvement Plans (RIPs) for regions and districts, drawing on region/district data and reports from Guyana EMIS. They also have a quality assurance role for data submitted by educational institutions under their supervision.

#### **6.1.12 Educational Institutions**

Educational institutions have an obligation to always maintain up-to-date information, including about learners and human resources in their institution, in conformity with the data management framework of the Guyana EMIS.

It is mandatory for public and non-public institutions to provide accurate and timely information to the Ministry of Education through the EMIS. In the event of non-compliance, the Ministry may take administrative measures up to and including



Educational institutions can maintain their own institutional MISs, with the ability to upload and/or capture data from their institutional systems to the Guyana EMIS, either through automated upload, online data capture via website, or mobile app (app to include offline data capture option for institutions with limited connectivity), or submission of data to DEOs in hard copy for data capture.

Educational institutions have full access to manage and update current institutional data once uploaded to the Guyana EMIS and read-only access to archived institutional data once it has been closed for editing to enable data comparisons, reporting, and analysis. Educational institutions use data and reports from Guyana for institutional decision-making purposes, including comparing institutional performance with the overall performance of similar institutions at district and national levels.

#### **6.1.13 Public (including educators, parents, learners, employers, and researchers)**

When requested by education authorities, educators, parents, and learners have a responsibility to provide up-to-date information related to learners enrolled in any educational institution under MOE supervision. The required information may include, but will not be limited to, names of students and parents, unique identifiers of parents and learners, address and contact information, birthdate, birthplace, nationality, and information regarding health/disability.

The public might wish to access Guyana EMIS public data dashboards and reports for various reasons, including personal interest, choices about future studies, ability to review the performance of the education system, research purposes, etc. The public has read-only access to aggregated datasets, with accompanying dashboards, reports, and querying filters, via Guyana EMIS public website for information, research, planning, and decision-making purposes.

### **6.2 Data Governance**

#### **6.2.1 Data management framework (DMF)**

MOE will take an active leadership role in managing data for all education stakeholders and actors through the establishment and maintenance of an overall EMIS Data Management Framework (DMF). The main objective of the DMF is to maintain unified and shared

data standards across components of the EMIS ecosystem.

As part of the DMF, a set of core datasets and detailed data specifications will be maintained and updated. The DMF will provide detailed descriptions of (1) Core data sets serving as the foundation for all EMIS sub-systems (educational institutions, HR records, learner records), (2) Data recorded in the online census systems, (3) Data collected from EMIS operational/transactional sub-systems (4) Clear definitions and glossaries of terms (5) Coding and classification schemes (6) Identifier schemes for major entities. (7) Definitions of all indicators and other forms of measurement (8) Definitions of all compliance reports for all departments.


##### **6.2.1.1 EMIS Core Entity datasets**

To ensure sustainable integration of all relevant business workflows and services within the EMIS, the MOE will maintain a collection of datasets corresponding to each EMIS core entity tracked by the EMIS. These datasets shall be used as reference information in all components of the EMIS ecosystem. It is mandatory for every component of the EMIS ecosystem to always refer back to the core datasets as the unique source of trusted information. The structure and content of the core master datasets will be updated through standard operating procedures described further below.

Core EMIS datasets are the following:

- **Educational institution dataset (EID)**: a list of uniquely identified institutions delivering education services to the population in any given school year and falling under the supervision of the MOE. The directory shall cover all education levels, from ECE to Higher Education, including TVET. A snapshot of the dataset will be created at the end of each scholastic year and archived for future reference.
- **Human Resources dataset (HRD)**: a list of uniquely identified teaching and non-teaching staff records with reference to the uniquely identified administrative position(s) they are assigned to in any given year.
- **Learner dataset (LED)**: a list of uniquely identified learners with reference to the educational institution, grade, class, and





scholastic year in which they are enrolled. Standard Operating Procedures set by the EMIS SC shall be strictly followed for the creation, deletion, or update of core entity dataset records.

#### **6.2.1.2 Unique identifiers**

Major entities tracked by the EMIS will be assigned a unique and immutable identifier (EID, HRD, LED). Once associated with an entity, the unique identifier shall remain associated with it forever.

The MOE will leverage existing identification systems set by other government bodies and comply with those to the extent possible. When such identifiers do not exist or are not compliant with EMIS quality and/or coverage requirements, the MOE may implement its own identification system.

#### **6.2.1.3 Nomenclatures/classifications**

The MOE will maintain descriptive metadata for the following:

- Data recorded in the online school census: The MOE will document all data requirements captured by the school census
- Data recorded in the operational/transactional EMIS sub-systems: The MOE will document all data requirements of the operational EMIS sub-systems.
- Definitions and glossaries of terms: The MOE will maintain a glossary of all terminologies used in the EMIS.
- Coding and classification schemas: The MOE will maintain a set of key reference lookup tables used for the classification of EMIS entities, such as education system structure and curricula, administrative breakdown, institution types, etc. The MOE will ensure that the coding system used in an EMIS lookup table complies with the coding system used by other government agencies.

#### **6.2.1.4 Indicators and reports definitions**

Definitions of all indicators and other forms of measurement: The MOE will maintain a list of all indicators built from the EMIS and used by the administration and institutions. Each indicator will be documented with the following metadata: indicator name, definition, purpose, calculation method and formula, data requirements, data sources, types of disaggregation, calculation frequency, interpretation,

quality standards and limitations, and intended audience.

Definitions of all report requirements for all departments: The MOE will maintain a list of all statistical reports produced by the EMIS in accordance with the information requirements of all administrative units consuming EMIS information. Each report will be documented with the following metadata: report name, purpose, recipient(s) units/intended audience, unit of analysis, data fields with their calculation method, frequency, quality standards and limitations.

All indicators and reports will be published in a data warehouse and made accessible securely to data consumers based on their access rights.

#### **6.2.1.5 DMF update policy**

The data and reporting needs of the different stakeholders and actors will be regularly captured and reviewed by the EMIS steering committee through standard operational procedures. As information needs evolve, gaps in the current data collections will be identified, and the DMF will be updated accordingly.

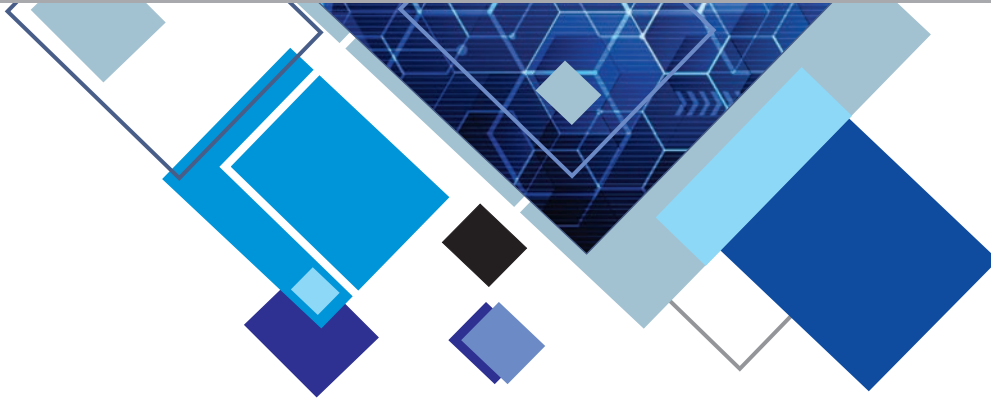

A standardized DMF update request form will enable data consumers within the MOE administration, regional offices, and educational institutions to express new data needs in relation to their operational requirements. The EMIS SC will analyze requests regularly and implement them in the DMF when approved.

#### **6.2.2 Data security and privacy**

The EMIS maintains vast quantities of accurate information on schools, staff, students, facilities, and more. Controlling access to this information is essential to ensuring privacy is maintained, data entry responsibility is aligned, data quality is managed, audit trails are meaningful, and security is enforced.

##### **6.2.2.1 Data Privacy and anonymization**

The Ministry of Education must ensure that appropriate procedures are in place to protect the personal information of students, parents, and employees. Being the custodian of all the information in EMIS, the Ministry of Education must clearly communicate in writing to the students, parents, and employees that their personal information will be protected and will not be provided to any entity



working outside the umbrella of the government unless anonymized. Information that may be considered private or protected must not be disclosed on the following grounds:

- Interpretation
- Protection of privacy/confidentiality/safety of students and employees
- Protection of records that may be used in legal proceedings
- Protection of research information

The Ministry of Education must also technically empower the EMIS in protecting the private/protected information from its users in the system

#### **6.2.2.2 EMIS Confidentiality Agreement**

The EMIS Confidentiality Agreement is intended to reduce the wrongful acquisition, misuse, or disclosure of EMIS information.

The EMIS Confidentiality Agreement mandates the following:

EMIS users **MUST**:

- Protect the privacy, confidentiality, credibility, security, and availability of EMIS information always.
- Take all the necessary, reasonable, and suitable steps to prevent the distribution of EMIS data to anyone except those who are specifically designated as per this Policy.
- Solely obtain the required information to carry out only legitimate tasks on behalf of the MOE, field directories, or schools.

EMIS users **MUST NOT**:

- Divulge, give, or transfer any EMIS data to any person or entity outside the MOE void of a written permit by the Ministry.
- Permit any other person from using one's specific User ID or Password.
- Use another person's User ID and Password to access the EMIS.
- Leave their Password unprotected (written in a conspicuous manner / at a conspicuous place).

The Ministry of Legal Affairs will ensure the EMIS Confidentiality Agreement reflects current Guyana privacy and cybercrime legislation.

The Management Information System (MIS) Unit will ensure all EMIS users have access to the EMIS

Confidentiality Agreement drafted by the Ministry of Legal Affairs.

Any changes to the EMIS Confidentiality Agreement will necessitate all EMIS users consenting to the updated EMIS Confidentiality Agreement.

Any EMIS information released by School Principals to parents, school committees, or other third parties is subject to the EMIS Confidentiality Agreement.

#### **6.2.2.3 EMIS Fair-Use Agreement**

The EMIS Fair Use Agreement is intended to minimise fraud, illegal and offensive behaviour, and abuse of the EMIS while making clear what rights and privileges EMIS users can expect. A Fair Use Agreement ensures that the EMIS is used reasonably and fairly by everyone. The agreement sets penalties for unfair use that disadvantages large numbers of schools.


The EMIS Fair-Use Agreement states:

The MOE reserves the right to review the system and other related records to ensure that no harm befalls the system by individuals, groups, or organisations. Any EMIS use or procedure that impairs or damages system credibility or capability to continue its work, whether directly or indirectly, is strictly prohibited and may lead to disciplinary and/or legal action.

EMIS users **MUST NOT**:

- Use the EMIS in any way that violates laws or human rights or conflicts with other system devices or others.
- Use the EMIS in a manner that adversely affects its credibility and effectiveness.
- Use the EMIS with the intention of harassment or any other abusive intent.
- Enter the EMIS any information that contains profanity or offensive content.
- Attempt to access any EMIS data (inclusive photographs), whether uploading or receiving or sending, that The MOE considers abusive in any form. This includes explicit sexual or discriminatory, or defaming material.
- Use the EMIS to achieve personal gains, interests, or conduct one's personal business.

The Management Information System (MIS) Unit will ensure all EMIS users have access to the EMIS Fair Usage Agreement drafted by the Ministry of Legal Affairs.



The MOE may terminate user accounts for any breaches of the EMIS Confidentiality Agreement and the EMIS Fair Use Agreement.

The Human Resources Unit is responsible for the implementation of a strategy that ensures all new and existing EMIS users consent to the EMIS Confidentiality Agreement and the EMIS Fair Usage Agreement.

Any changes to the EMIS Fair Use Agreement necessitate all EMIS users consenting to the updated EMIS Fair Use Agreement.

#### **6.2.2.4 Termination or Blocking Accessibility to the EMIS**

The Human Resources Unit will ensure all processes of terminating MOE personnel include provisions that impair or remove all EMIS User Accounts of terminated staff. The Human Resources Unit will notify the Management Information System (MIS) Unit without delay upon the termination of MOE staff. The Management Information System (MIS) Unit will disable or suspend the EMIS user accounts of terminated staff immediately upon notification from the Human Resources Unit.

#### **6.2.2.5 Passwords Management Policy**

All EMIS users must comply with strong password practices. Specifically, EMIS Users are not permitted to divulge EMIS account details to any person, system, or software at any time in any way. Offenses are subject to penalties as determined by the Ministry of Legal Affairs.

All EMIS users will report to the Ministry of Legal Affairs any data breaches, violations of the Confidentiality Agreement, violations of the Fair Use Agreement, inappropriate use of passwords, or any other act that violates this policy or the Cyber Crimes legislation.

#### **6.2.2.6 System Administration Access Control**

The Education Management Information System (EMIS) is a mission critical system. A mission critical system is a system that is essential to the survival of a business or organization. When a mission critical system fails or is interrupted, business operations are impacted significantly. Mission critical systems require strong controls to govern who has access to the servers, databases, and other technical components that manage and protect the hardware, software, and data that make up a large part of EMIS.

EMIS System Administrators are not permitted to divulge their EMIS account details to any person, system, or software at any time in any way.

The Human Resources Unit needs to ensure ministry offboarding processes include provisions for the disabling or removal of all EMIS System Administrator accounts.

EMIS System Administrators must comply with strong password practices. Strong password practices also apply to routers, switches, service accounts, and other non-human account access.

The EMIS System Administrator Role should be assigned to at least two persons to mitigate the risk of a single database administrator as the sole owner of database passwords and sole owner of EMIS administration knowledge within the MOE.

EMIS System Administrators must not use personal accounts for system process operations.

#### **6.2.2.7 Procedure for accessing information stored in Guyana EMIS**

The MOE EMIS holds considerable data spanning many years and provides numerous existing reports that list, aggregate, and present that data in a wide range of formats. The EMIS generates many reports by selecting a standard report option in the EMIS. The EMIS generates data in graphic or tabular format. The EMIS user can further refine or manipulate the data as required. However, not all standard report options in the EMIS satisfy all reporting requirements.

Departments within the ministry or other ministries and other external stakeholders frequently require data in a format that the EMIS standard report options do not provide. Data requests are individual requests for data in a format not produced by the EMIS standard report options.

Furthermore, the analysis of EMIS data can yield valuable insights into the performance of the ministry, DEOs, schools, and other areas of the education sector. Protocols are essential to control the release of EMIS data to ensure that any conclusions drawn on the data are well managed by the ministry. Additionally, the extraction of data requires specialized technical skills, high level database security access and is typically time-consuming to extract, refine and test. Protocols are required to ensure data extractions are carried out only when all existing avenues of reporting are



exhausted.

Protocols also allow for the installation of repeated data requests as standard report options in the EMIS if the data request occurs frequently. Requesting a new standard report option is achieved using a “Change Request Form” and is subject to budgetary constraints.

The EMIS data request form is downloaded, filled, and emailed to the Central Planning Unit (CPU), which will follow up with the applicant as the request is processed. The EMIS data request form is only submitted after all existing avenues of direct reporting through EMIS are exhausted. EMIS Data requests from external stakeholders must use the existing data request form and follow the associated process.

Once the data request is submitted either by an internal or external stakeholder, the Central Planning Unit (CPU) reviews and provides comments on the request form and then shares it with the EMIS Steering Committee for their validation and approval. External stakeholders requesting data must comply with the EMIS Confidentiality Agreement.

Data requests have three parts, extraction, aggregation, and presentation. The Management Information System (MIS) Unit is responsible for extracting the corresponding data from the EMIS databases only if the associated report isn't readily available in the EMIS. Any further data aggregation or manipulation required following extraction is the responsibility of the Central Planning Unit (CPU). Any enhanced presentation of the data, such as graphing or statistical analysis, is the responsibility of the Central Planning Unit (CPU).

#### **6.2.2.8 Disaster recovery plan**

Globally, all mission critical systems have robust Disaster Recovery Plans (DRP) and Business Continuity Plans (BCP). DRPs and BCPs ensure the ongoing operational capacity of the EMIS in the event of a disaster or catastrophic hardware/software failure. System-wide failures present substantial, costly interruptions to business processes and potentially loss of data. Large outages also present a substantial risk to the MOE's reputation and well-

known professionalism.

MOE is committed to ensuring a robust Disaster Recovery and Business Continuity plan is always in place to minimise the impacts of systems failures, ensure the continuity of work and prevent any data loss.

The **EMIS Steering Committee** is responsible for preparing the Disaster Recovery Plan for EMIS to be agreed upon and officially endorsed. The **Management Information System (MIS) Unit** is responsible for maintaining and continuously updating the disaster recovery and business continuity plans.

**Management Information System (MIS) Unit** ensures that plans, devices, physical infrastructure, networks, and budgets are in place to ensure full recovery of "core functionality" capable of supporting full uploads within 24 hours.

**Management Information System (MIS) Unit** will ensure all procurement plans and budgets are in place to ensure that all essential (not backup) hardware, including network infrastructure, are procured and installed before the warranties expire.

**Management Information System (MIS) Unit** ensures off-site data backups of production databases have a maximum delay of 1 hour to production data at any point in time.

**The EMIS Steering Committee** defines the frequency of DRP testing to ensure it remains viable.


**Management Information System (MIS) Unit** conducts DRP viability testing according to the frequency and instructions of the **EMIS Steering Committee**.

**EMIS Steering Committee** ensures that the disaster recovery plan (DRP) is always of high priority.

#### **6.2.2.9 EMIS IT Security**

The data within EMIS is invaluable to the operational needs of the ministry. EMIS is also a target for hacking, either for data theft or simply for the amusement of hackers. Malicious attacks and data breaches can result in substantial performance degradation and present reputational risk to the ministry with the potential for regulatory fines.

The Ministry is committed to ensuring the EMIS is monitored constantly and tested regularly to ensure best practice protection is always in place through: **Penetration test:** Penetration testing is a simulation



of unauthorised access to a computer system. This type of testing is normally carried out by external agencies over a short period, similar to financial audits. Reports are submitted on the ability of the computer system to withstand attempted unauthorised access. Penetration testing can identify potential weaknesses in system access controls. Penetration testing is not typically an ongoing test.

- The **EMIS Steering Committee** must establish the frequency of penetration testing.
- The **Management Information System (MIS) Unit** conducts penetration testing as per instructions from the EMIS Technical Committee.
- The **EMIS Steering Committee** will ensure that any penetration failures are addressed as an immediate priority.

**Network monitoring:** The monitoring of network traffic is a continuous operation intended to identify suspicious activity in real-time. Network monitoring is also meant to identify potential performance issues, ideally before these issues impact system availability.

- The **Management Information System (MIS) Unit** must ensure a Memorandum of Understanding (MoU) is always in place to ensure the EMIS hosting provider performs rigorous and ongoing monitoring of network-level performance and security, including the immediate notification of any data breaches, intrusions, suspicious activity.

**Internal Monitoring and Audit:** Virtually all computer systems record various forms of activity in log files. Logs have many formats and vary substantially in the level of detail. Logs offer a historical view of potentially suspicious activity, such as suspicious attempts to log onto a system. Logs also indicate the duration of various processes, highlighting potential system performance issues before such issues substantially impact system performance.

The **EMIS Steering Committee** must define the scope of monitoring the EMIS logs and the frequency of that monitoring. Log monitoring can include but is not limited to web server access, operating system access, database server access, user access, and query execution logs.

The **Management Information System (MIS) Unit** will submit reports on the outcomes of log monitoring to the EMIS Steering Committee at the frequency specified by the EMIS Steering Committee.

The **Ministry of Legal Affairs** will investigate all compromised passwords and data breaches, issue penalties, and involve the relevant security authorities or other external parties as required.

The **Management Information System (MIS) Unit** will report any suspected network or data breaches to the hosting provider for investigation immediately upon discovery, and vice-versa. Upon confirmation, the **Management Information System (MIS) Unit** will report these breaches to the **Ministry of Legal Affairs** immediately upon confirmation.

The **Management Information System (MIS) Unit** will report any incidents of compromised passwords and data breaches to the Legal Affairs Directorate immediately upon discovery.

## 7 Resources for Implementation of the EMIS Policy

The Government shall be the main funder of the EMIS in Guyana. The implementation of the EMIS Policy is expected to cost around USD 1.2 million during the first phase (2022-2026). Ultimately, implementation of the EMIS Policy will depend on the availability of sufficient and stable funding. Integrated with the MOE's five-year planning cycle, the MOE shall develop a costed five-year EMIS Master Plan, which articulates priorities, sequenced implementation, and financial needs of the EMIS Policy over the plan period. The dedicated budget lines for EMIS shall be incorporated into the MOE's annual implementation plans and budgets.

Recurring EMIS operational and support budget lines include, but are not limited to:

- Technical support for the infrastructure hardware.
- Technical support for the infrastructure software
- Technical specialized training the central ministry's team capacity to manage, sustain and technically support the system.
- Central, regional, and school level training, including the extra cost of staff training in remote areas.

- Hardware and infrastructure maintenance
- Infrastructure hardware procurement and periodically renew concerned software licenses.
- Cloud hosting-based procurement.
- A designated budget for the Disaster Recovery and Business Continuity plan.
- Software development, including Contingency Plan for urgent changes
- Stationery
- Penetration and performance tests

In addition, the MOE shall pursue multiple resource mobilization options, including the following:

- **Development partners:** Development partners are encouraged to contribute to the implementation of the EMIS Policy. Through the Local Education Group mechanism, the MOE shall mobilize and align the development partners' support to the five-year EMIS Master Plan.
- **Private sector:** The Private sector is playing an increasingly major role in education, especially in digital learning. The Government shall explore **public-private partnership** strategies to implement the EMIS Policy within Guyana's legal framework and coherent with national interests. Some options for engaging private sector partners in the use of ICT in education, which will also benefit the development and operation of EMIS, include the below.
  - Infrastructure/connectivity: private sector partners, especially telecommunication companies, may support enhancing connectivity to schools

- Devices: they can be leased or rented from private companies or purchased under cooperative agreements through competition
- Contents/data: operators can offer zero or reduced fees for data for educational purposes
- Capacity development: private sector partners may be able to provide training for education policy makers, administrators and teachers on the use of technologies

## 8 EMIS Policy Monitoring and Evaluation

The phased approach to implementation of the EMIS Policy and detailed results framework with expected outputs as well as the accompanying M&E framework are presented in the 5-year Master Plan. It is important to note that monitoring the progress towards implementation of the EMIS Policy will be fully aligned with the ESP monitoring process.

The EMIS Policy implementation will be reviewed and evaluated in 2025 by an independent evaluator(s), and necessary updates will be made based on the findings.