



***Strategic Framework (Plan) for Integrated
Education Management Information
System***



Ministry of Education, Science and Technology- 2022

Table of Contents

1. Background	2
1.1 Context.....	2
1.2 iEMIS in Nepal other Education Data Systems.....	3
1.3 Challenges and Opportunities.....	4
2. Conceptual Framework for an Integrated EMIS for Nepal	4
2.1 Guiding Principles	7
2.2 Vision, Mission and Objectives	7
3. Strategic Framework for Building and Implementing Integrated EMIS.....	8
3.1 Key Factors for Consideration.....	8
3.2 Outline of a Strategic Approach.....	8
3.3 Strategic Areas and Working Policies.....	9
3.4 Expected Outputs and Milestones.....	10
4. Operational Framework of the Integrated EMIS	10
5. Institutional Framework for Integrated EMIS	12
5.1 Federal Level Institutional Arrangements.....	12
5.2 Province Level Institutional Arrangements.....	13
5.3 Local Level Institutional Arrangements	14
6. Risks and Mitigations	14
7. Timeline and Budget	15

1. Background

1.1 Context

The government of Nepal provides both formal and non-formal education. The latest statistical data shows that the Net Enrolment Ratio (NER) for primary education has reached to 96.6%, whereas the Gross Enrolment Ratio (GER) is 135.4% for the same level (Ministry of Education [MOE], 2016). Likewise, the NER and GER for the secondary education (grade 9-12) are 37.7%, and 56.7% respectively. The Ministry of Education, Science and Technology (MoEST) is responsible for the development and implementation of education policy and programmes.

Relevant policies and plans include:

1. *National Education System Plan (NESP) 2028 – 2033(1971 – 1976)*
2. *Education Act, 2028 (1971), 2049 (2992), 2073 (2016)*
3. Nepal's Constitution of 2015¹

The structured the current school system as Basic Education (Classes 1 to 8) and Secondary Education (Classes 9 to 12)². With the promulgation of Nepal's Constitution 2015, the federal government has decentralised the governance system of education and shared responsibilities with the provincial governments and local authorities³. The new mechanism of educational governance has been layered at three levels: federal, province and municipality. The figure below shows the high level organisational structure of MoEST.

Under the Ministry of Education, Science and Technology: the Curriculum Development Centre (CDC) is responsible for developing school curriculum; the Centre for Education and Human Resource Development (CEHRD) provides in-service teacher training for school teachers and also operates the iEMIS; Janak Education Materials Development Centre (JEMDC) prepares and distributes textbooks; teacher handbooks and other learning materials; the Educational Review Office audits school performance and assesses student achievement; and the National Examination Board (NEB) executes the national standardised examinations which include Secondary Education Examination (Class 10) and School Leaving Certificate Examination (Class 11 and 12).

The Ministry of Education, Science and Technology develops its policy and programmes and implements policies through District Education Co-ordination Units (DECU). The education Ministries in each province (MoSD) can develop their own educational plans and programmes and implement them within their region. Under federalism, local governments (municipalities) are given authority to manage basic and secondary education and can therefore recruit teachers in government schools, give permission to an individual to open private school, and develop local education policy and curriculum. This places much greater emphasis on ensuring that local governments have ready access to education data in a timely manner and appropriate format for decision making.

¹ Available at: https://www.constituteproject.org/constitution/Nepal_2015.pdf. (Accessed on 29/09/2021)

² Government of Nepal (2016) *Education Act 2073*.

³ Government of Nepal (2015) *Constitution of Nepal*.

After completion of school education, school graduates have two options to choose higher education: university education and vocational training. Currently, there are 11 universities and 6 health science institutes, which provide higher education. The *National Education Policy, 2076* has allowed provinces to open their provincial universities. The Council for Technical Education and Vocational Training (CTEVT) is an alternative pathway, which provides skill-based courses for high school graduates. The progression structure of the formal education system is shown in the figure below.

1.2 iEMIS in Nepal other Education Data Systems

It is important to understand the relationship of different information systems operated throughout MoEST as it is relevant to overall system design, complete statistical data and enable capacity such as tracking of individual students.

Currently, various central level agencies, under the MOEST, operate information systems for data collection, which fall under the definition of EMIS as per the mandates they have over each sub-sector of education. The systems are provide data and information on institutions, their enrolments, teachers, finance, and other information to concerned agencies and also make data available to the public in through online publications, reports, and data releases.

The table below provides the list of national level government agencies that collect education data related to EMIS.

Table 1. Main systems concerning EMIS and their relationship to iEMIS

SN	System	Department/Sectors	Sector/Data
1	Integrated EMIS (iEMIS)	Centre for Education and Human Resource Development	General (basic) education including ECE. Students, Teachers, Staffs, Physical Infrastructure Learning assessment data including that required for the National Examination Board (NEB) (integrated in Phase II iEMIS Development). Achievement scores for Grade 5, 9 and 11 for the Education Review Office (integrated in Phase II iEMIS Development) School financial data
2	Technical, and Vocational Education and Training (TVET) Management Information System (MIS)	Council for Technical Education and Vocational Training (CTEVT)	Students, courses, teachers
3	HRIS or TMIS	Teacher Service Commission Teacher Record Office	Teacher Payroll and teacher in service deployment data.
4	CLPIU MIS	Central Level Project Implementation Unit	Physical Infrastructure data

SN	System	Department/Sectors	Sector/Data
5	Food for Education MIS	Food for Education	Mid-day meals and other information
6	Non-Formal Education Management Information System (NFEMIS)	Center for Education and Human Resource Development	Non-formal education beneficiaries
7	Higher Education Management Information System (MIS)	University Grants Commission (UGC)	Data on higher education students and courses.

Phase II iEMIS development has made some progress in towards the rationalization of data systems by integrating the Grade 5, 9 and 11 year examination data into iEMIS as well as school financial data.

1.3 Challenges and Opportunities

There has been lot of efforts for use of ICT for Education Sector governance and data driven planning but major problems and challenges we are facing are:

- There are different MIS system in different agencies which runs within there administrative domain and does not talk to each other
- There are no common standards for digital data representation and every system has their own set of standards
- Most of the system are focused on data collection and there is less effort on integrated service delivery through business process integration.
- There is duplication of efforts while using these systems, e.g. multiple registration of students in different systems with similar information.
- Lack of proper data validation method result in poor accuracy and quality of data.
- Difficult to implement concept of Student Tracking.
- Difficulty in measuring different progress indicators.

Despite above mentioned challenges there are following opportunities:

- Need of ICT based MIS has been well realized and many agencies are already using such system
- Increased skill to use ICT up to school level
- Technological solution exists that could make different system interoperable
- Government of Nepal has introduced “Nepal Government Information Technology System (Management and Operation) Guidelines, 2071 and Government Enterprise Architecture 2.0 which gives foundation to develop Integrated System.

2. Conceptual Framework for an Integrated EMIS for Nepal

Integrated EMIS shall be able to integrate different MIS system which are being used and to be developed by diffrenet agencies through commonly agreed standards for data and service exchanges,

yet being flexible enough. For this reason integrated EMIS is conceptualized to be built and implemented based on two foundational components:

- a. **Common Registries:** There will be three common registries each for Educational Institutions, Students and Teacher. These registries will be used by all the MIS system for verification of details of respective entity.

Educational Institution registry consists of universal coding for those institutions along with other required attributes like name, address and classification of that institution.

Similarly, Student registry consists of universal unique ID with its attributes like name, address, parents details, age etc, which are verified with external database of Vital Registration and deduplicated.

Like wise Teacher Registry consists of unique ID of teacher with other identifier and their expertise, experience records etc.

- b. **Data and Service Interoperability Layer:** Data and Service Interoperability Layer also known as service bus is responsible for exchanges of data and services between different connected Information System and implementation of standards for data and services. This layer is also responsible transaction management issues like data integrity, message queue, load-balancing etc.

Different **domain specific MIS** systems like School Level EMIS, Exam MIS, UGC MIS, Technical and Vocational Education MIS etc. will be centralized MIS for respective domain and they keep records and provide services in respective domains. These central level MIS will be connect to each other and registries through Interoperability Layer.

Similarly **Institution Level MIS** like School MIS, TVET Institute MIS, College MIS, Foreign Affiliated College MIS etc. will run by respective root level entities to perform their business process and record keeping. These MIS are also connected to respective central MIS and registries through Interoperability Layer. By this arrangement data from Institution level MIS is sent to respective central level MIS in real time. Moreover, since all Institution Level MIS will be referencing registries for verification and validation of details of Institutions, Students and Teachers' details we can maintain common coding and data standardization throughout the ecosystem. Institution level MIS will be developed in modular architecture so that we can implement modules of these MISs one by one based on capabilities of institutions. In other hand if any institutions are already using their own MIS they can continue using those MISs, if that system is capable to send data in central level MIS in specified format and refer registries for verification and validation of entity details.

For **reporting** facility, there will be multidimensional data repository, a data warehouse, which stores disaggregated (with reference to geographic locations, educational institution, level of stream of education program etc.) subject-oriented time series data. A **Business Intelligence (BI)** enabled reporting tool will use data in data warehouse and generate demand based analytical report. This reporting facility will also be able to generate reports required by three tier of government. These provision of analytical reporting will help for evidence-based planning in education sector and since all three tier of government can access reports of their needs more ownership to the system could be achieved.

Finally integrated EMIS will communicate external system like VERSPMIS (Civil Registry), National ID, SUTRA etc. for data verification, validation and reporting purpose as required.

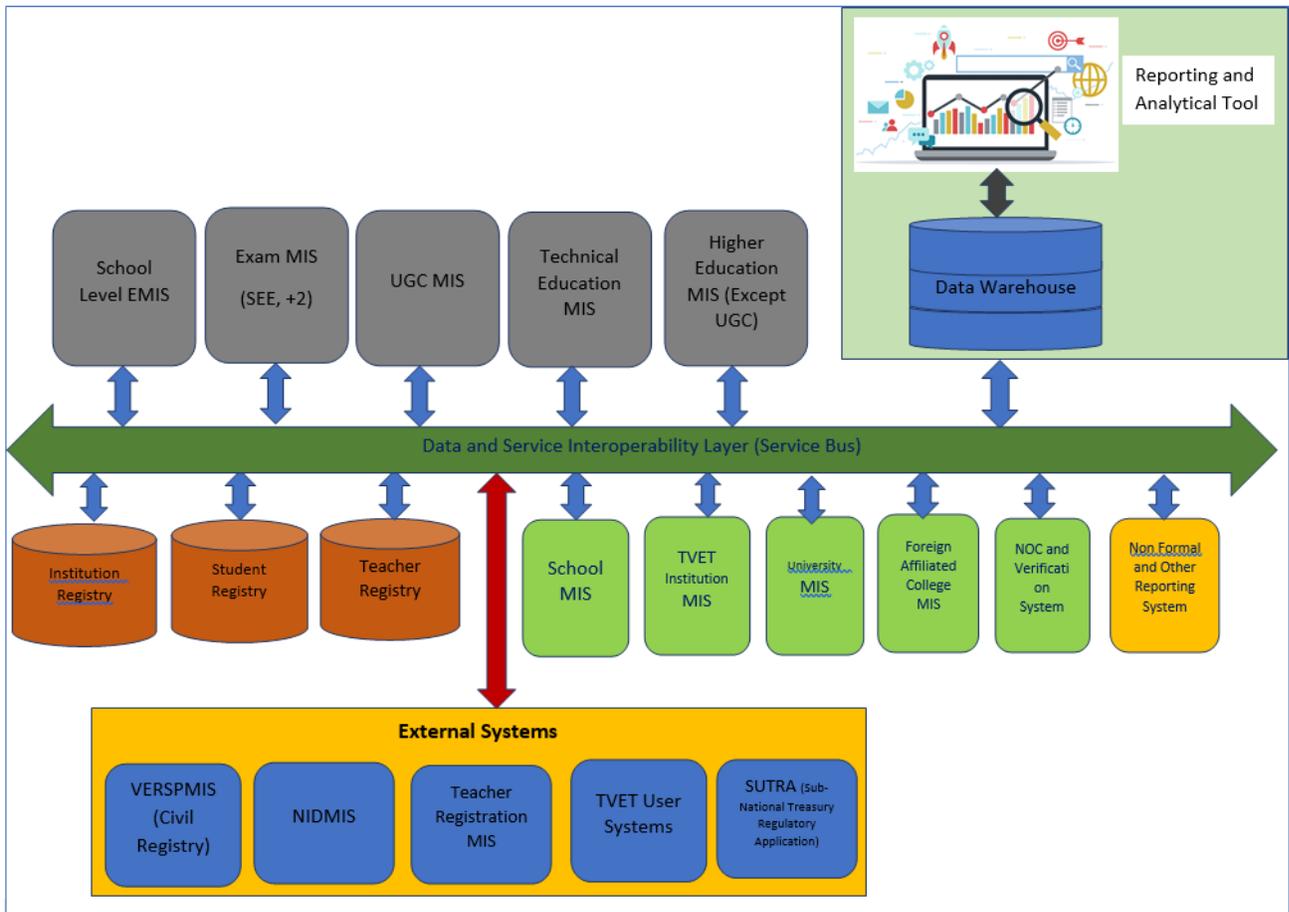


Figure 1: Framework for Integrated Education Sector MIS

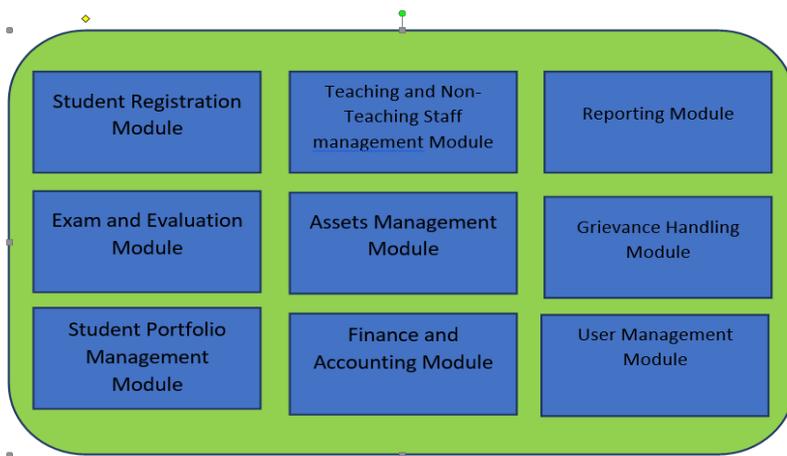


Figure 2: Different Modules in School MIS systems (One of Entity Level MIS)

2.1 Guiding Principles

- (a) Ensure data sharing and interoperability as core principle for all relevant stakeholders:** At the core of the Integrated EMIS approach lies the principle of common data collection and sharing between agencies. All agencies need to agree on using and sharing data and information by building interoperable and secure systems and data exchange protocols and relevant decisions shall be made in ministerial level.
- (b) Ensure clarity in institutional roles in federal structure:** It is critical for the design and operationalization of integrated EMIS aligns with the constitutional spirit of cooperation, coordination and collaboration between the federal, provincial, and local level and supports the mandates of each level. Institutional structures to guide the implementation of this system also needs to be built into the existing structures for intergovernmental coordination and clearly specify the roles and responsibilities of each stakeholder.
- (c) Adopt phased and incremental approach to linking different programs and systems:** Implementing integrated EMIS needs a long-term planning horizon and commitment to ensure phased implementation and integration. This also requires harmonization of business processes and data sharing protocols.
- (d) Ensure updating of verified data:** A validation and authorizing framework is critical to ensure uniform application of the updating protocols, which ensures data in registries and MISs are verified and updated.
- (e) Define clear data ownership rules while ensuring security and privacy:** Constitutional provision of rights to privacy of personal information needs to be ensured by implementing strong data security and ownership as well as user access rules.

2.2 Vision, Mission and Objectives

Vision:

- An **unified, flexible, accessible and sustainable** foundation for education sector governance.

Mission:

- Develop integrated EMIS to improve **coordination and harmonization** federal, provincial and local level agencies in Education Sector and related stakeholders.

Objectives:

- To develop **unified registries** of educational institutions, students and teachers.
- To **reduce errors** in record keeping and reporting systems.
- To have better record keeping and **tracking of a student's academic activities**.
- To have an **unified platform for multi-dimensional and intelligent report** generation as required by National and Sub-national government agencies.
- To integrate business process and improve **efficiency of Service Delivery** in Education Sector.
- To enable and support response and learning **in emergency situations**.

3. Strategic Framework for Building and Implementing Integrated EMIS

Realizing the concept and visions of an integrated EMIS requires a strategic and long-term approach that takes into consideration existing institutional, policy and programmatic landscape. This section attempts to identify key factors that need to be taken into consideration and outlines a strategic approach to building and implementing EMIS in Nepal.

3.1 Key Factors for Consideration

- (a) Agency Needs:** There are many agencies in national and sub-national level who look after education sector and they are involved in either conducting academic activities, performing education governance or planning and development. Integrated EMIS shall be built to cater needs of all these agencies.
- (b) System Readiness:** The different agencies manage their information systems in silos and vary in their readiness to build interoperability with other systems. Some agencies still continue to rely on paper-based/excel-based lists and have underdeveloped reporting systems to manage the information. Hence, a phased approach needs to be adopted starting with those agencies and information systems that are more developed and slowly support the others to integrate.
- (c) Institutional Constraints:** Capacity and resource constraints are an issue at both institutional, local and provincial level as well as in some agencies at the federal level. The constraints arise not only from availability of personnel but also from the skills and motivation of the officials and a general lack of institutional culture to work across sectoral boundaries. Ensuring high-level of commitment, enabling a collaborative environment, and sustained availability of resources are key aspects that the approach needs to consider for successful implementation.

3.2 Outline of a Strategic Approach

- (a) Achieve policy agreement between various stakeholders and Ministerial decision early on including on use of single registries and phased implementation:** Integrated EMIS require strong inter-agency coordination and commitment. As such it is important to build shared understanding and confidence in the concept and approach early on through a consultative process to build policy consensus and commitment. Given the different factors identified above, a phased implementation of the integrated EMIS and gradual linking of various systems is an important aspect of such agreement. The roles and responsibilities of different stakeholders as well as the changes in the business processes and systems for specific programs (including the use of a single registry) need to be clarified and agreed early on in the process with the understanding that (i) the policy and institutional framework may evolve as the implementation reaches scale, and (ii) the linking of various programs will be based on integration of business-processes and not consolidation of programs or of existing program systems.
- (b) Establish robust protocols to ensure data standards, quality and governance:** A key requirement for ensuring usability of the data in is to ensure the quality of data in the integrated EMIS. Sharing and use of data between agencies also needs to be based on a clearly defined data governance mechanism and protocols. Ensuring data quality (accuracy and completeness) of individual and academic characteristics can only be achieved by robust linkages to common registries and establishing protocols for data verification at Institution and local level.

- (c) **Adopt Phased Implementation Approach:** Development of implementation of Integrated EMIS shall be done in phased approach. In first phase development of Registries, Interoperability Layer and Reporting framework shall be developed. In second phase sectoral MIS shall be connected to integrated EMIS and in third phase we make mandatory to use institute level MIS gradually dividing in different sub-phases.

3.3 Strategic Areas and Working Policies

S.N.	Strategy	Working Policy	Remarks
1	Develop foundations for integrated EMIS	<ul style="list-style-type: none"> • Obtain ministerial decision on implementation of integrated EMIS. • Define and approve data standards and interoperability framework. • Develop foundational registries, data and service interoperability layer and implement them. • Develop data warehouse and business intelligence enabled reporting mechanism. • Define integrated business processes for citizen centric services. 	
2	Ensure Ownership of different stakeholders	<ul style="list-style-type: none"> • Ensure consultation with national and sub-national level government agencies and other stakeholders • Define clear roles and responsibilities of different agencies to build compatible domain specific MIS or upgrade existing to be compatible with integrated EMIS. • Define roles and responsibility to implement institution level MIS. • Ensure that reporting facility meets the need of different stakeholders including sub-national government. • Establish a framework to engage stakeholders during development and implementation of integrated EMIS. 	
3	Enhance capacity of stakeholders to use integrated EMIS	<ul style="list-style-type: none"> • Conduct assessment of existing information system and their readiness to integrate with integrated EMIS. • Provide technical support to integrate systems to integrated EMIS framework. • As when required develop and provide common and reusable software modules and components. • Prepare a different capacity development plan for different stakeholders based on their needs. 	

		<ul style="list-style-type: none"> Engage appropriate agency to conduct capacity development programs. 	
4	Ensure availability of resources for implementation of integrated EMIS	<ul style="list-style-type: none"> Ministry to arrange resources for development of foundational components (Registries, Interoperability Layer, Reporting Framework) Central level agencies responsible for a domain focus on consolidating current ICT funding to avail resource for development/ enhancement of respective domain specific MIS Replicable Institution Level MIS to be developed respective central agency and make available to Institutions 	

3.4 Expected Outputs and Milestones

S.N.	Output	Time Frame	Remarks
1	Approved coding, data standards and Interoperability Framework.	2 Months	
2	Development and Implementation of National level Registries, Interoperability Layer and Reporting Framework	6 Months	Ministry shall take lead
3	Sectoral MIS Enhanced/Developed and interoperable with Integrated EMIS	7 months	Respective agency shall take lead
4	1000 Schools use at least registration and Evaluation module of School MIS	12 Months	
5	3000 Schools use at least registration and Evaluation module of School MIS	18 Months	
6	10000 Schools use at least registration and Evaluation module of School MIS	24 Months	
7	All Schools use at least registration and Evaluation module of School MIS	36 Months	
8	Higher education fully interoperable with integrated EMIS	24 Months	

4. Operational Framework of the Integrated EMIS

Operation of Integrated EMIS and can be highlighted with following operation procedures/ business process.

- Approval of **coding, data standards and interoperability framework** shall be done at first before actual development and implementation of integrated EMIS.
- Update of Registries: Student Registry** will be updated based on current EMIS data to the extend it can be converted to approved standards. And for new students and students not yet registered shall be updated to registries within two months of next academic year. Validation of records in student registries will be done with birth registration data from VERSPMIS through system level integration. After registration and validation of record in

students registry a proof of registration with Student ID and basic information is provided to students.

Institution Registry is updated with necessary details including geo-location by respective domain authority such as for Schools by CEHRD, Higher education institution by UGC etc.

Similarly, **Teacher Registry** is updated by local levels for school teachers, universities for teachers in concerned universities, CTEVT for vocational training and education resources.

All of these registries will provide unique identifier to respective entity and as when required printed proof of registration is provided to respective entity.

Entry in registry will be **renewed** in periodic basis as specified by ministry to maintain valid and updated registry with changes in attributes of respective entities.

After r

- c) **Unique Identifier to be used:** All MIS system of education sector shall identify Institutions, Schools or Teachers with unique identifier in respective registry, this also includes all transaction related to particular entity is also linked with this identifier and stored in respective sectoral MIS.
- d) **Student Enrollment/Registration** in an institute shall be made every academic year and during registration it will be checked if the student is registered in another institution or not, a student can only register in an institute for particular academic year. This is very important to have precise number of enrollment and drop-outs. Moreover, local levels shall be made responsible for physical verification of data of Registration and Enrollment.
- e) **Registration for board examination and higher education** will be simplified process, which means students don't have to re-enter all details but they can submit their Student_ID and apply for examination with all necessary payments. In this process eligibility of that student shall be checked in system level with different sectoral MIS. For example, to check if a student is eligible for SEE examination shall be checked with records from School level EMIS.
- f) **Development of School MIS and TVET Institution MIS** shall be developed centrally and replicated to different Schools and TVET Institutions, so that they can operate in harmony with integrated EMIS and redundant cost of development could be avoided.
- g) **Use of third-party MIS** in different Schools and Institutions could be allowed as long as they comply interoperability and security standards and feed required data for integrated EMIS.
- h) **Schools shall update students' performance and evaluation** related records on regular basis so that that could be verified by local levels as when required, this will improve the quality of data.
- i) A multidimensional data storage, **data warehouse**, will be developed, which stores time-series data in disaggregated form (based on institutions, geographic location, academic program, activity, performance etc..) from different sectoral MIS. A **Business Intelligent (BI) tool** and report generation platform runs on the top of this tool which shall be able to produce analytical reports required by different stakeholders.

5. Institutional Framework for Integrated EMIS

5.1 Federal Level Institutional Arrangements

For development and implementation of integrated EMIS requires a high level of commitment and coordination between related agencies and stakeholders to ensure that the vision is realized. As such, a high-level mechanism would be essential to identify key policy issues and recommend for solution to those issues. Two committees are proposed here to undertake the technical and policy related activities necessary to coordinate between various stakeholders: a secretary level Policy & Planning Committee, and Technical Working Committee at Joint Secretary level. The composition of these committees could include MoEST, MoCIT, UGC, CEHRD, CDC, NEB, ERO, Provincial Ministry and Local Level representatives etc. The roles and responsibilities of the two committees could be as follows:

Roles and Responsibilities of Social Registry Related Committees

Steering Committee	Technical Committee
<ul style="list-style-type: none">• Serve as forum for interagency dialogue and coordination• Provide policy and technical guidance to the technical committee• Review and approve policy and technical documents prepared by technical committee• Review the implementation plan, ensure adequate resources and support, and monitor implementation	<ul style="list-style-type: none">• Identify programs and systems to be gradually linked to the integrated EMIS.• Conduct assessments of the readiness of systems and existing policy provisions that guide data exchange, sharing and security protocols• Draft policy and operational documentations and forward to Steering Committee for review• Form technical sub-groups to focus on specific areas as required• Prepare implementation plan and guide participating agencies to implement agreed activities

In addition to above committee each central level agency will have **Implementation Committee** for day-to-day planning and supervision of work regarding integrated EMIS within scope of their roles and responsibilities.

Roles and responsibilities of various agencies, would be as follows.

Ministry of Education, Science and Technology

- Draft policy and technical documents to ensure clear data ownership and use rules, as well as quality and security of data collected, stored and shared through the integrated EMIS.
- Develop basic foundations of integrated EMIS (Registries, Interoperability Layer, Reporting Framework)
- Develop system capability and technical documentations to link other domain specific MIS with integrated EMIS.
- Provide technical support and orientation to other agencies on integrating existing or o be developed domain specific MIS with Integrated EMIS.
- Serve as resource agency to provide technical assistance to agencies that are developing their own MIS to ensure system interoperability with integrated EMS.
- Coordinate and consult with other agencies to develop reporting and monitoring dashboard based on respective needs.

- Develop training material and technical documentations for use in capacity building at federal and subnational level on the benefits, uses, and processes followed in integrated EMIS based citizen-centric service delivery system

Center for Education and Human Resource Development

- Adopt center registry-based intake and registration procedures in school level EMIS and make necessary enhancement.
- Identify and request ministry for necessary changes, if there is requirement for changes in any program guidelines and bylaws to support implementation of integrated EMIS based system.
- Develop generic School MIS to operate based on integrated EMIS and deploy it on schools in phased manner
- Populate information of schools in Institution Registry.
- Provide trainings to local levels in use of integrated EMIS for local level planning and governance for Education.
- Provide training to schools for use of new school MIS.

National Examination Board

- Adopt center registry-based intake and registration procedures Examination MIS and make necessary enhancement.
- Identify area for improvement of business process and verification process and implement that.
- Identify and request ministry for necessary changes, if there is requirement for changes in any program guidelines and bylaws to support implementation of integrated EMIS based system.
- Provide training to schools for use of enhanced examination MIS.

University Grant Commission

- Adopt center registry-based intake and registration procedures in developing Higher Education MIS.
- Identify and request ministry for necessary changes, if there is requirement for changes in any program guidelines and bylaws to support implementation of integrated EMIS based system.
- Make necessary arrangement for universities to develop and operate MIS that could feed data to Higher Education MIS.
- Populate information of Higher Education level Institutions in Institution Registry.

Center for Technical and Vocational Education

- Adopt center registry-based intake and registration procedures in central TVET MIS and make necessary enhancement.
- Identify and request ministry for necessary changes, if there is requirement for changes in any program guidelines and bylaws to support implementation of integrated EMIS based system.
- Develop generic TVET MIS to operate based on integrated EMIS and deploy it on TVET institutions in phased manner
- Populate information of TVET institutions in Institution Registry.
- Provide training to TVET institutions for use of TVET Institution MIS.

5.2 Province Level Institutional Arrangements

It is critical to establish the provinces as users of the Integrated MIS for both **planning and implementation** as well as for **monitoring** of outputs and outcomes of programs being implemented through local levels within the respective provinces.

The **Ministry responsible for Education Sector development** at the province level could be designated as focal agency for integrated EMIS adoption at the province level.

Besides this province level institutions could also be responsible for implementing **capacity development** programs

5.3 Local Level Institutional Arrangements

The local level would be the most important stakeholder in the implementation of integrated EMIS to provide the ‘first mile’ of service delivery for the population. The policy objectives of increasing access and inclusion of all to education facility can only be achieved with strengthened institutional capacity and ownership of the integrated EMIS at the local levels. In this context Education Unit/Section/Division in local is responsible to

- ensure updating of the data in the system
- Validate data entered in the system
- Execute capacity building programs
- Ensure adequate resources, and institutionalizing the use and updating School MIS
- Use data from integrated EMIS in monitoring, planning and budgeting processes

6. Risks and Mitigations

Risks (Level)	Implications	Potential Mitigation Measures
<p>Coordination Risks:</p> <p>Receiving buy-in and cooperation from relevant stakeholders to adopt and implement the agreed policy framework (Medium)</p> <p>Coordination challenges with local and provincial level (Medium)</p>	<p>Delay in adoption of policy framework and operational guidelines</p> <p>Lack of Cooperation and ownership of integrated EMIS at the service delivery level.</p>	<p>High level steering committee to agree on policy framework and implementation strategy</p> <p>Include stakeholders including provincial and local level in policy consultations and demonstrate willingness to incorporate positive feedback</p>
<p>Institutional and System Capacity Risks:</p> <p>Low capacity and underdeveloped systems to link with integrated EMIS (Medium)</p>	<p>Delayed integration of systems and quality concerns in implementation and service delivery</p>	<p>Focus on capacity building and support to agencies. Ensure budget allocated for system interoperability development. Seek technical assistance from DPs as when required.</p>
<p>Operational Risks:</p> <p>Delay in updates of registries (Medium)</p>	<p>Registries will create unique records of students and educational institutions with unique identifier, delay in populating these registries will result in delay in benefit realization of integrated EMIS.</p>	<p>Strong ministerial leadership to ensure adequate resources available for timely population of registries.</p>

Availability of adequate fiscal resources over the implementation period (Medium)	Incomplete roll out resulting in loss of investment.	Consolidate ICT budget of all stakeholder agencies for implementation of integrated EMIS.
Linking and integration of different MIS and systems at different levels of development. (Medium)	Linking of MIS affected limiting the coverage of integrated EMIS and its effectiveness in delivering on its objectives.	Focus on data standardization and use of unique Identifier throughout the eco-system. Use open API frameworks/e-Services for data exchange.
Technology disruptions and innovations (Low)	Innovations in technology make integrated EMIS redundant requiring update	Build Integrated EMIS in agile and modular manner based on open standards.

7. Timeline and Budget

Though for full implementation of integrated EMIS may take up-to 4 years, the first phase of the design, development and testing of the integrated EMIS framework shall be realized within 12 months of starts of implementation. Then integration of additional systems will be continued finally covering all schools using MIS based operation and management.

Key areas requiring budget are:

- Roll-out of the integrated EMIS including school level MIS,
- Populating data and updating it,
- Development of program and administrative systems to build interoperability,
- Monitoring and evaluation,
- capacity building

Detail budget assessment shall be made for each component and preliminary assessment shows current budget allocation trends for MIS systems in different agencies shall be enough to cover most of budget requirements.