**Khyber Pakhtunkhwa
Education Sector Plan Support
Programme (KP-ESPSP)**
Technical Cooperation Services

The Development of
Education Data Quality Standards
for Khyber Pakhtunkhwa

December, 2018

**Khyber Pakhtunkhwa
Education Sector Plan Support Programme (KP-ESPSP)**

Technical Cooperation Services

An education management information system is more than simply a database or an IT system

(World Bank 2017)

Contents

Acronyms

ASC	Annual School Census
BISE	Board of Intermediate and Secondary Education
DCMA	Data Collection and Monitoring Assistants
DCTE	Directorate of Curriculum and Teacher Education
EEF	Elementary Education Foundation
E&SED	Elementary and Secondary Education Department
EMIS	Education Management Information System
ESP	Education Sector Plan
ESRU	Education Sector Reforms Unit
FATA	Federally Administered Tribal Areas
IMU	Independent Monitoring Unit
KP	Khyber Pakhtunkhwa
KP-ESPSP	Khyber Pakhtunkhwa Education Sector Plan Support Programme (EU-funded)
MNSQE	Minimum standards for quality education
NMTDs	Newly Merged Tribal Districts
PITE	Provincial Institute for Teacher Education
PSRA	Private Schools Regulatory Authority
SABER	Systems Approach for Better Education Results
SIF	School Improvement Framework
SOPs	Standard Operating Procedures
TBB	Textbook Board

1. Background to the KP Education Data Quality Standards

The Elementary & Secondary Education Department (E&SED) has been endeavouring to improve the quality of education in Khyber Pakhtunkhwa (KP) for several years. A significant step forward in this regard has been the adoption of the minimum standards for quality education (MNSQE) in Pakistan, approved by the IPEMC in January 2016, and the development and approval of Teacher Educator Quality Standards in 2017/2018.

Additional steps which have been taken, as part of an overall drive in KP to raise levels of quality in the education system, include:

- increased budget for education
- improved management and use of both the recurrent and development elements of the budget
- improvement of textbooks (grade 1-10 Science, Mathematics, General Knowledge and English) in the light of the textbook standards
- merit-based and school-specific recruitment of teachers
- needs-based continuous professional development of teachers
- reform and restructuring of DCTE, PITE and examinations boards
- the introduction of universal assessment of grade 5 and 8 and sample-based assessment of grade 2 students' learning outcomes
- sample-based teacher competency survey for improvement of the teaching/learning process, and
- performance ranking of districts using qualitative and quantitative data.

From a systemic efficiency point of view, these reform efforts represent a great step forward. Systematic work on the development of quality standards present a unique opportunity to align all quality indicators towards a singular objective – the improvement of the learning outcomes of students in KP, illustrated in the diagram on page 2 of this report. This is particularly important going into 2019 as the governance structure of the former FATA (now the Newly Merged Tribal Districts [NMTDs]) are merged with that of KP and a directorate for the NMTDs has been established under the E&SED. A key need as part of the merger process is to unify the education systems of KP and the NMDTs, and put in place standardised systems and processes.

An essential element in this regard concerns the role that data play in helping the E&SED to plan, monitor

The role of data quality standards in strengthening education provision in KP:

o Provides a reliable evidence base
o Supports good planning
o Facilitates decision-making
o Monitors progress and evaluates impact
o Establishes a strong quality assurance function
o Contributes to greater efficiency and effectiveness of implementation
o Functions as a key management tool.

and deliver its activity in support of a quality education agenda. Adopting quality standards for education data management and use will strengthen the EMIS *system* and help to develop a *service* culture in the E&SED, providing:

- analysis of education data, resulting in better quality and more reliable data and reporting
- clarity on what is required to resource and strengthen the EMIS system and service
- regular reviews and following procedures across the education system (based on agreed roles and responsibilities), and
- strong interdependent working relationships between the supply and demand sides of data production, management and use.
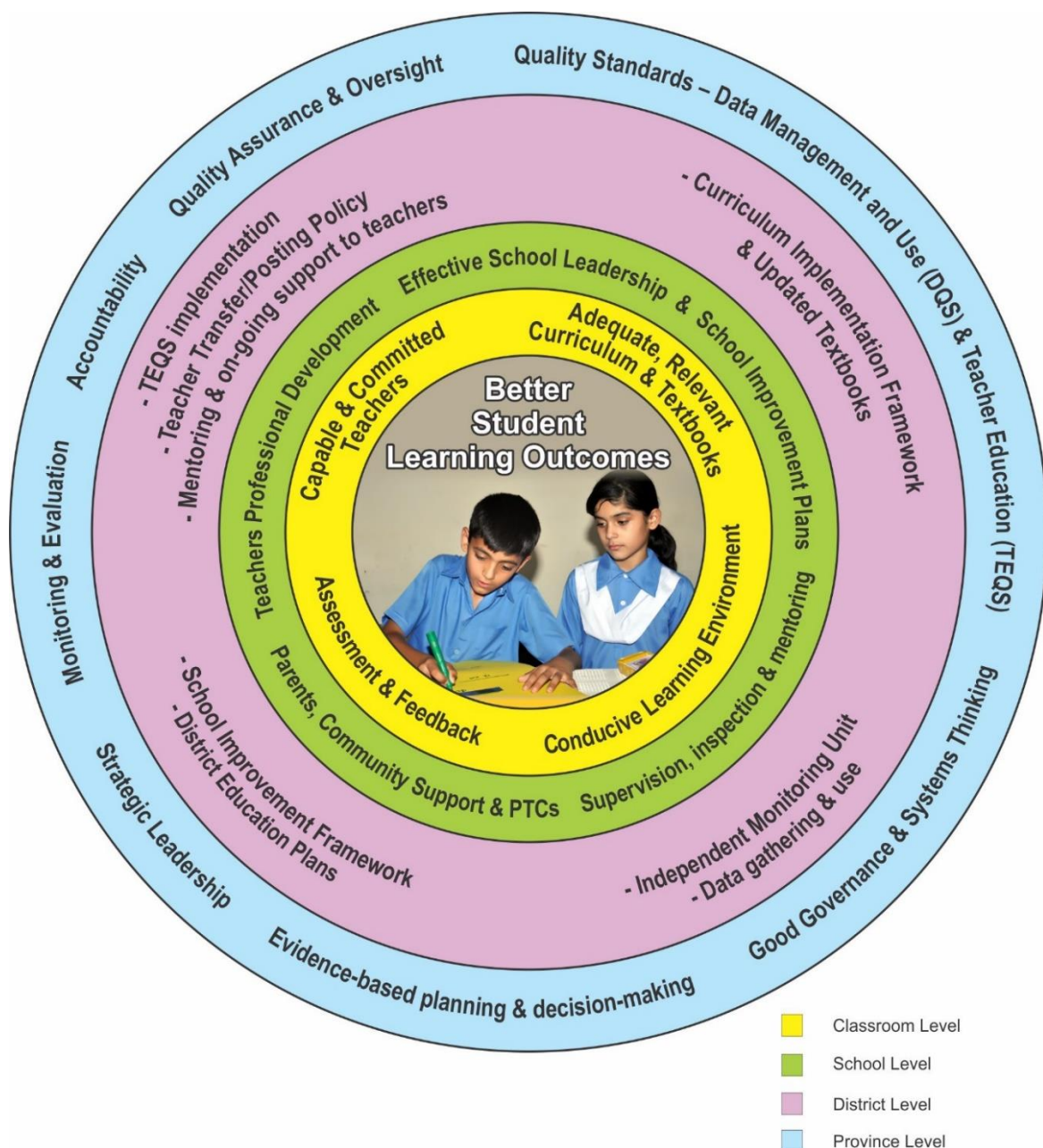
2. The Development of Education Data Quality Standards for KP

Khyber Pakhtunkhwa, like other provinces of Pakistan, has invested significant resources in the collection, processing, and management of more and better data through its Education Management Information System (EMIS). However, these investments have not always been matched by a parallel emphasis on the use of data for policy-making, planning and decision-making.

Part of the reason for this is that existing linkages between the EMIS function and other line and attached institutions of the Elementary and Secondary Education Department (E&SED) are generally perceived to be weak (when viewed as a coherent system).

> **Education Management Information System**
>
> A system responsible for collection, maintenance, analysis, dissemination, and utilisation of data in an education system.
>
> (World Bank, 2017)

Anecdotal evidence also indicates that the various offices of E&SED find limited utility in the available EMIS datasets, as far as their respective planning and decision-making processes are concerned.

At the same time, the work of the E&SED is affected by capacity weaknesses in the use and interpretation of available data, which negatively affects the quality of longer-term planning across the Department.

The perception that EMIS data are not fit for purpose has arisen in part because the data are not based upon the kind of defined quality standards which would support detailed verification and validation, and clearly articulate the service that the EMIS Cell and IMU should provide to the rest of the E&SED. The Independent Monitoring Unit (IMU) collects data on a regular basis. From 2017-18 onwards, the E&SED has been integrating both of these supply-side mechanisms for gathering and analysing education data - the EMIS Annual Schools Census (ASC) and the IMU monthly data collection system. The Census data are now being collected through the IMU's Data Collection and Monitoring Assistants (DCMAs). This approach reflects better joined-up thinking, although the emphasis on IT-based solutions needs to be matched by developing the capacities of the system so that the Department is able to institutionalise this IT-based system of data gathering and analysis. Consequently, effective and efficient data management in E&SED needs a strategic re-think in order to make it fit for the purpose of evidence-based planning and decision-making.

Data and knowledge management play a crucial role in establishing strong education systems. The role of good quality data is fundamental to the process of tracking implementation progress of the KP-ESP 2015-20, for example.

And in the same way, the availability and use of good data is central to monitoring the success of the School Improvement Framework (SIF), currently being implemented by the E&SED.

The World Bank's **Systems Approach for Better Education Results (SABER)** for EMIS identifies four elements that are essential for a well-functioning EMIS system and service:

1. an enabling environment
2. system soundness
3. quality data, and
4. utilisation of data for decision-making.

The quality of EMIS data and their accuracy, reliability, relevance and accessibility has resulted in the low confidence of the senior management of E&SED to make use of this data in their decision-making. This point is highlighted in the Khyber Pakhtunkhwa Education Sector Plan (ESP) 2015-20 where it states three principal limitations of EMIS data: a) delay in data collection and analysis; b) quality concerns; and c) missing indicators. However, it does not clearly identify how to overcome those limitations. The extent to which this is still the case in 2018/19 is open to question, as a considerable amount of time has been invested to upgrade the skills of the EMIS team, as well as the IMU data gatherers.

The EMIS function in E&SED has not always been able to provide education planners and managers with reliable and accurate information to frame key strategic decisions about future service provision, or for monitoring education indicators over time (as is required when implementing an education sector plan, for example). At the same time, education planners and managers have not routinely demanded and used EMIS data to inform their own work. The reasons for this are somewhat opaque, but what is apparent in the E&SED is a confidence deficit characterised by:

- a small EMIS staff who are not always confident in promoting the service function of their work (as they have been restricted largely to a data-gathering and IT function);
- data users who are not confident in their own skills to understand and use data strategically;
- data users who lack confidence in the accuracy and reliability of EMIS data (for a variety of coherent and not-so-coherent reasons), and
- the absence of quality standards and Standard Operating Procedures (SOPs) to strengthen and professionalise data collection, verification and validation.

The effectiveness of EMIS data has been further weakened by the limited research and analysis capacity of the EMIS Cell to generate good quality, user-friendly reports. Currently, there is a lack of a systematic approach to disseminating EMIS data and generate useful knowledge products based on the data. Lack of capacity and limited budgets may help to explain this, but at the same time the EMIS resource has not been effectively managed by

E&SED. Existing job descriptors of EMIS staff are not always consistent with the technical or managerial nature of the positions, and the 2017 Needs Assessment Study revealed that EMIS staff at the provincial and district levels are frequently asked to perform functions that are not relevant to an EMIS function. Having said this, there is positive evidence in recent months that the performance of both the EMIS Cell and the IMU has improved as their mandates have been clarified (IMU as data collectors and the EMIS Cell as data analysts and disseminators).

From the policy perspective, it is important to introduce some balance into a rather one-sided argument which has tended to lay the blame solely on the supply side of the equation (i.e. the staff of the EMIS Cell and the IMU). If we accept the precepts of the World Bank's definition of EMIS, then responsibility and accountability for the system has to be shared between the supply side and the demand side (i.e. the users of data).

Another important management initiative is the move to better integrate the various datasets that are present in the E&SED and improve the supply of relevant, reliable and timely information to guide educational policy, planning and management decisions. The integrated EMIS system needs to be used to facilitate enhanced collaboration between different units of the Department and improve knowledge management to strengthen effective policy and planning. This can best be achieved through clear custodianship of the data which provides regular and easy access to data for end-users.

One of the key findings of a systems analysis study of data management and use in the E&SED (carried out in 2018) was the need to develop education data quality standards. Essentially, the rationale for this was:

- to create an enabling environment for the collection, analysis and use of data
- to build trust in the system and service provided by the supply side and develop stronger accountability on the demand side, and
- to strengthen the knowledge management culture of the Department.

In view of this, the education data quality standards will **define the minimum standards for a strong supply function** which collects, analyses and disseminates data according to agreed timelines.

What are Standards?

A **standard** is:
- a recognised unit of quality, achievement or comparison, especially in a professional context

- a set of characteristics or qualities that describes features of a product, process, or service.

Why do we need them?

Standards provide:

- a basis for government departments to set common goals

- a strong tool with which to measure performance at all levels

- a basis for comparison and a reference point against which achievement can be evaluated.

At the same time, the data quality standards will **articulate the minimum standards for how, when and in what way data are used by the demand side institutions of the E&SED**.

Together, this is intended to establish three key positive outcomes for the E&SED:

- the **creation of a strong quality assurance function** across the Department
- **greater trust** in the data themselves and the data suppliers, and
- a **culture of data use** by all the offices of the E&SED so that it becomes a normalised responsibility as part of everyone's daily work.

The education data quality standards will also encompass any associated qualifications requirements and professional behaviours and competences. In this sense, the development of data standards is an extension of the original scope of the MNSQE and fills an important gap as data plays a key role in the achievement of the other standards.

3. The Four Policy Themes of the KP Education Data Quality Standards

The Education Data Quality Standards have been constructed around four broad themes, as outlined in the table below. They are based on the World Bank's framework, but customised to the context of data management and use in the E&SED:

DATA QUALITY THEMES	RATIONALE
1. ENABLING ENVIRONMENT	EMIS is both a system and a service for data collection, analysis, management and use. A key area of learning over the past two years has been that focusing on discrete, technical issues alone is not sufficient to transform the EMIS function. Consequently, it is important to focus on the service nature of the EMIS function to balance the conventional view of EMIS which sees it solely as a technical system. This is an essential part of the enabling environment for better management of data across the E&SED. Efficient knowledge management requires managers to be aware of what data are available; that the relevant custodian makes the data available; and that E&SED managers articulate their data needs. Capacity development is necessary to enable managers to make the best use of data, through a systematic process of asking questions and seeking answers from qualitative and quantitative data.
2. SYSTEM SOUNDNESS	A reliable data management and use information system and service needs to fulfil a number of characteristics. Its data need to be relevant, accurate, timely, accessible, open to interpretation, coherent, methodologically sound and reliable. The absence of standards for data management and use in KP goes a long way to explaining the perception that data are not fit for purpose. With agreed standards in place, detailed verification and validation can be managed. Standards also clearly articulate the quality of the service that data providers make available to the rest of the education department.
3. QUALITY DATA	The E&SED currently does not have any data quality standards or SOPs for data gathering, analysis, validation, verification or management. These standards are necessary to improve the quality of the data service and to build trust across the system so that the data are actively and regularly used. This is an area of work that needs to have an equal focus on the supply and demand aspects of the system, so that the working relationship between the E&SED and the IMU authority is collaborative and based on joint responsibility.

4. UTILISATION OF DATA FOR DECISION-MAKING	The EMIS Needs Assessment Study of 2017 recommended the development of an integrated EMIS function to address the confusion of multiple datasets, build trust in the system and service, and reinvigorate a culture of data-driven decision-making in E&SED. It is also necessary to have in place a system to monitor data use and identify where this needs to be strengthened. The proposed quality assurance mechanism could help to drive this function and provide important senior management oversight in the process.

These standards for education data management and use help to define a quality assurance system with clear operating practices, roles and responsibilities to achieve reliable, accurate, verifiable data that inform decision-making across the E&SED.

As such, they simultaneously strengthen the *system* of data management and use, and professionalise the *service* dimension of the data and knowledge management function in relation to its end-users, typically non-technical managers, who need to receive reliable data in simple formats they can use for planning and monitoring.

4. The Structure of the KP Education Data Quality Standards

The Education Data Quality Standards have been grouped under the four themes mentioned above. Each contains a statement of the standard outlining the key knowledge and competencies required of supply and demand actors in the system. Each statement is broken down into **components** relating to knowledge, skills and behaviours. The components are then further elaborated through **indicators** that are clear, observable and measurable statements which describe the aspects of effectiveness that characterise a coherent data management and use system and service.

The standards will embody the agreed criteria for an effective and efficient data management and use function in the E&SED. They can be used by supply-side data experts and demand-side non-technical users of data to monitor and assess their own practice and the smooth running of the system as a whole. This initial design of the standards will serve as a key document for designing a strategic framework for piloting, implementing and monitoring the standards with clearly defined roles and responsibilities across the EMIS Cell and IMU on the supply side, and all the attached institutions of E&SED on the demand side.

Themes
Important topics requiring the development of data quality standards

Standards
Specific areas of focus under each theme

Components
The elements which make up each standard: knowledge, skills, behaviours etc.

Indicators
Observable and measureable statements that provide evidence of effectiveness in practice
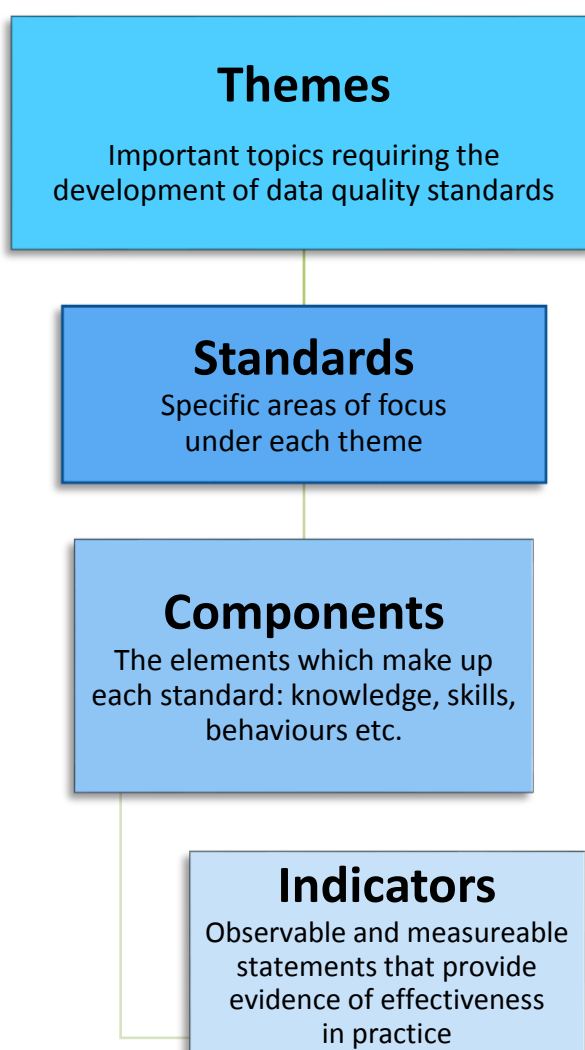
5. The KP Education Data Quality Standards

This chapter is structured into 4 sections and each section deals with one of the four themes of the new KP Data Quality Standards, as follows:

5.1 Theme 1: Enabling Environment
5.2 Theme 2: System Soundness
5.3 Theme 3: Quality Data
5.4 Theme 4: Utilisation of Data for Decision-Making.

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5.1 Theme 1: ENABLING ENVIRONMENT

The overall goal of an EMIS system is to improve educational quality, which is generally defined as including the preparedness of students to learn, the conduciveness of the learning environment, the relevance of learning content, the skill and training of teachers, and the linkage between students' educational outcomes and their positive participation in society. Educational quality is thus concerned not only with **inputs** (e.g., school attendance), but also with **educational processes** (e.g. teaching methods) and **outputs** (e.g., literacy and numeracy).

In the context of KP the enabling environment for EMIS encompasses the policies, structure, resources and culture that make possible data collection, management, analysis, dissemination access and use. Organisational structures and institutionalised processes form an essential part of this and help to characterise the extent to which the Department operates a data-driven working culture across all of its institutions. Enabling elements include the provision of adequate and appropriate human resources; budget and infrastructure to make the system functional.

The EMIS function of E&SED is both a **system** and a **service** for data collection, management, analysis, and use. The first key concept to consider is that EMIS is not just viewed and managed as if it were exclusively a technical function focused only on the development of datasets and IT-related software and hardware. The second key concept is that data users (the demand side) have roles and responsibilities which help to strengthen the system (and service) as a whole, and need to work closely with the suppliers of data and analyses. This is an essential part of the enabling environment for better management and use of data across the E&SED.

Whether the tasks of data gathering and analysis are done by EMIS or IMU is, in a sense, immaterial – all managers need to realise that efficient knowledge management requires them to be aware of what is available; that the relevant supplier makes data and analysis available; and that E&SED managers articulate their data needs. Capacity development is

necessary to enable managers to make the good use of data, through a systematic process of asking questions and seeking answers from qualitative and quantitative data. At the present time, there is a strong argument to consolidate what the E&SED has in the way of data sets and focus on a set of specific questions to which it requires answers, such as how can we improve learning outcomes; what is happening in the classroom; how do teachers teach, and so on. In this way, the institutions of E&SED can begin to construct a knowledge management system that works with the specific conditions and requirements of the Department and strengthens planning and decision-making as a result.

Theme 1: Enabling Environment

STANDARD 1.1 E&SED develops and implements policies and structures to provide quality data for better system management & service delivery.

COMPONENT	INDICATOR
1.1.1 Policy Formulation E&SED formulates a policy framework which encompasses resource allocation, capacity development, roles & responsibilities.	1.1.1.1: constitute a technical working group (TWG) comprising members from demand and supply sides with defined and approved TORs
	1.1.1.2: TWG to draft a policy document and get approval from competent authority
	1.1.1.3: notify and disseminate policy document and review periodically with stakeholders
	1.1.1.4: commitment from E&SED, Finance, P&D and SSU regarding proposals, allocation and approval of budget for resources and capacity development
	1.1.1.5: Approved clear roles and responsibilities: supply side-data collection by IMU, data analyses and dissemination of data by Provincial EMIS Cell. Demand side- for the use of data as part of the planning and decision-making process
1.1.2 Institutional Structure E&SED provides a clear institutional framework for better system management	1.1.2.1: notify clear mandate of all units working across the department for data management (for both Supply and Demand sides)
	1.1.2.2: well-structured databases developed and made accessible to all stakeholders

and service delivery across the Department.	1.1.2.3: supply side introduces user friendly formats for data utilisation
	1.1.2.4: an oversight mechanism is introduced to monitor data management and use especially in relation to the needs of end users
1.1.3 Resources E&SED provides infrastructure, financial and human resources which address the needs of both supply and demand sides.	1.1.3.1: supply and demand sides are equipped with relevant hardware and software
	1.1.3.2: adequate financial resources are made available for planned activities (recurrent and development)
	1.1.3.3: adequate human resources are available in the system and all sanctioned posts are filled and deployed appropriately in line with agreed roles and responsibilities
	1.1.3.4: sufficient funds are available and used for professional development of supply and demand side stakeholders
1.1.4 System & Service Delivery E&SED develops and implements SOPs for quality data management ensuring accountability on both supply and demand sides.	1.1.4.1: develop SOPs in line with the needs of the demand and supply sides. (SOPs to be developed jointly by Planning Cell, EMIS Cell, IMU and DE&SE)
	1.1.4.2: conduct joint orientation session on revised SOPs by supply side for end users and disseminate the approved SOPs to all stakeholders
	1.1.4.3: establish feedback and complaint management/redressal system
	1.1.4.4: quarterly review meetings to determine/oversee the quality of services provided in the data flow by the oversight body in E&SED

Standard 1.2 E&SED designs and implements a continuous capacity development strategy and plan for supply and demand sides to ensure quality data management.

COMPONENT	INDICATOR
1.2.1. Capacity Development Strategy and Plan E&SED provides opportunities for development of appropriate skills for data suppliers and users.	1.2.1.1: E&SED allocates sufficient budget for the implementation of the DQS across the E&SED
	1.2.1.2: supply and demand side of data jointly identify areas for CD in understanding database systems (supply side) and the use of data for effective management and decision-making (demand side) with costed plans agreed
	1.2.1.3: EMIS Cell, Planning Cell in E&SED and DE&SE develop an annual capacity development work plan
	1.2.1. 4: E&SED maintains a pool of trainers and mentors to lead on the development and delivery of training interventions for both supply and demand side stakeholders
	1.2.1.5: develop annual calendar with specific training packages for the relevant staff
1.2.2 Data Management System E&SED provides customised applications and sufficient hardware to ensure efficient processing and data-based management system (DBMS).	1.2.2.1: resources are available and used by supply side to procure licensed system software
	1.2.2.2: supply side develops application software and updates it regularly for monitoring and planning
	1.2.2.3: sufficient resources are available for regular orientation on application software to the data users

Standard 1.3 E&SED designs and implements a knowledge management culture with efficient & effective communication channels to improve how the data system is managed and to strengthen service delivery.

COMPONENT	INDICATOR
1.3.1 Knowledge Management Culture E&SED develops awareness and understanding among stakeholders across the department (supply & demand sides) regarding efficient and effective use of data.	1.3.1.1: E&SED regularly updates its website and encourages the staff to give feedback for effective communication between the supply and demand side
	1.3.1.2: E&SED promotes the use of ICT to manage datasets in an integrated way and designs orientation and training on use and management of data to new recruits/transferred from other departments
	1.3.1.3: E&SED establishes an active supervisory body to monitor the effective use of data for planning and decision-making
	1.3.1.4: supervisory body regularly meets the stakeholders from the demand and supply side and gives directives according to the feedback of the stakeholders
1.3.2 Communication and Customer Service E&SED puts in place clear systems for data flow with defined roles and responsibilities for all stakeholders.	1.3.2.1: EMIS Cell establishes a customer service facility to address the needs of stakeholders in the use of data
	1.3.2.2: EMIS Cell develops a system to track complaints and suggestions from different units of the E&SED and provide professional guidance to improve the efficiency of their services
	1.3.2.3: roles and responsibilities between the EMIS Cell and IMU are clarified and clearly communicated to demand side stakeholders to enhance collaboration and integrated working
1.3.3 System & Service Delivery E&SED establishes a transparent and accountable system which helps to drive up efficiency	1.3.3.1: information on the methods and procedures used for the production of reports and data management by E&SED are available
	1.3.3.2: the compilation of data and the production of reports is based on methods and techniques in line with best practices

and effectiveness of service delivery in the system and provide a quality service to all stakeholders.	1.3.3.3: errors identified during the process are corrected and updated reports are disseminated for effective planning and timely decision making

Standard 1.4 E&SED allocates adequate resources for better data utilisation to ensure effective planning & decision making.

COMPONENT	INDICATOR
1.4.1 Adequate Resources E&SED allocates resources to strengthen a knowledge management culture.	1.4.1.1: EMIS Cell develops and presents annual development plans with a focus on quality data production, dissemination and use
	1.4.1.2 : EMIS Cell conducts regular awareness sessions on new developments regarding data interpretation and new indicators so the users are on board
	1.4.1.3: adequate resources reflected in the budget books
	1.4.1.4: E&SED releases/books budget for printing and publishing ASC to supply side of the data
1.4.2 Better Utilisation of Resources E&SED promotes a working culture based on integration of supply and demand stakeholders to make better use of resources.	1.4.2.1: E&SED establishes an oversight body /mechanism to monitor the proper utilisation of the budget
	1.4.2.2: demand and supply side regularly conduct brainstorming sessions during the development of indicators for data collection and dissemination to ensure production of quality data for planning and decision making
	1.4.2.3: the oversight mechanism recommends and approves effective plans
	1.4.2.4: accountability system is strengthened by the oversight body to monitor the use of resources across the E&SED
1.4.3 Effective Planning & Decision Making	1.4.3.1: the implementation of the Data Quality Standards improves the planning for effective decision making

E&SED uses data quality standards for efficient and effective planning and decision making.	1.4.3.2: EMIS Cell to develop statistical and analytical reports on education performance which improves planning and monitoring
	1.4.3.3: E&SED develops schemes of work (e.g. research studies) based on the analytical data by EMIS Cell and aligned with the DQS

5.2 Theme 2: SYSTEM SOUNDNESS

System soundness refers to the processes and structures that make up the EMIS function (system and service) in the Department and the extent to which these are aligned and integrated. This then provides the basis for describing how comprehensive the system is, and how efficient and effective it is.

A specific challenge in establishing system soundness in the E&SED is the existence of two principal data suppliers with different functions and areas of responsibility. The IMU currently is responsible for data collection. The EMIS Cell is currently responsible for data analysis and dissemination. The nature of the system has not yet clarified how the two institutions works together to avoid overlaps and gaps emerging. Hence the need for standards which describe how such institutions work together and deliver data through the E&SED.

System soundness encompasses:

- **data architecture** - the policies, rules, policies, standards and models that govern and define the type of data collected and how they are stored, used, managed and integrated within the E&SED and its database systems

- **data coverage** - how comprehensive the data collection and analysis function is in terms of providing qualitative and quantitative data and analyses to demand-side data users

- **analytical capability** - in what ways is analysis provided, in what formats and according to what agreed timetables; the strength of the technical processes – data collection, data verification and validation, data analysis - provided by the suppliers of data (EMIS Cell and IMU)

- **flexibility and dynamism** – system responsiveness, how flexible the system is to respond to feedback and emerging needs of the demand and supply side of the data

- **serviceability** – fitness for purpose; providing access to data; how user-friendly and helpful the system is; how it facilitates easy use of databases and analytical reports; how it facilitates the process of using data for decision-making and accountability, and

- **professional development** – how does the system address the capacity needs of stakeholders in terms of understanding, management and use of qualitative and quantitative data.

It is the responsibility of senior management to ensure effective system functionality to build trust, and facilitate the availability and use of reliable data. System soundness of this kind is a prerequisite for effective knowledge management.

Theme 2: System Soundness

STANDARD 2.1 E&SED plans and designs a dynamic and demand-oriented data management system to provide a reliable basis for informed decision-making.

COMPONENT	INDICATOR
2.1.1 Data Management Systems E&SED designs a dynamic data management system that will support informed decision making and planning.	2.1.1.1: E&SED notify the policies, rules and standards to control and manage the overall database using documented procedures, to guide the users how to operate and manage it
	2.1.1.2: E&SED design a data integration process to make possible how data are transformed from being operational into information that guides and structures decision-making
	2.1.1.3: EMIS Cell and IMU extract useful information from databases and display it in structured formats and use to develop awareness and understanding of key trends
	2.1.1.4: E&SED enact policies that strengthen compliance among data providers and users and enhance security of data
2.1.2 Demand-Orientation E&SED ensures the availability of a needs-based, reliable and user-friendly data management system.	2.1.2.1: E&SED design data supply system that supports data needs and monitors the availability of updated data to support service delivery and informed decision making
	2.1.2.2: E&SED design a platform to integrate all data, achieve greater accuracy, provide access to data, and improve reliability in data analysis and dissemination
	2.1.2.3: E&SED develop a format to collect, store, analyse and disseminate data on needs of end users

2.1.3 Completeness E&SED implements a data management system that fulfils the supply and demand needs of all the stake holders with low tolerance of errors.	2.1.3.1: E&SED defines a sound methodology and appropriate statistical procedures of data collection, processing, publication and dissemination which follow the international requirements of data production and use
	2.1.3.2: data providers analyse and provide qualitative and quantitative data to demand side users according to agreed schedules and formats
	2.1.3.3: E&SED establishes an enabling environment where data specialists regularly audit and check the soundness of the data management system – content, methodology and processes
	2.1.3.4: E&SED builds trust in the system and service between the supply and demand sides based on timely data provision, regular audits and corrective action
2.1.4 Collaboration E&SED ensures the active involvement of all the stakeholders to develop ownership, accountability & efficient service delivery.	2.1.4.1: E&SED has a transparent mechanism for coordination among all demand and supply side stakeholders
	2.1.4.2: regular and sound monitoring is undertaken to ensure smooth data flow to data managers and users
	2.1.4.3: data use in decision making and planning is regularly monitored by E&SED through a Quality Assurance mechanism
	2.1.4.4: clear roles and procedures are defined for all stakeholders with respect to their specific functions on both supply and demand sides of data management and use.

Standard 2.2 E&SED establishes a robust system to collect, analyse and disseminate reliable data to meet the demands of stakeholders.

COMPONENT	INDICATOR
2.2.1 Data Collection E&SED designs a robust mechanism of data collection that will facilitate a	2.2.1.1: data collection tools cover the full spectrum of data that are needed for effective planning and decision making
	2.2.1.2: all data sets are linked to the central EMIS database and provide timely, reliable and analysed data on a regular basis

comprehensive data analysis process.	2.2.1.3: data collection is based on an agreed schedule defined by E&SED
	2.2.1.4: clear SOPs are developed for data collection, cleaning, storage and analysis in line with principles established under the Quality Assurance mechanism in E&SED
2.2.2 Data Analysis E&SED designs a framework and process for data analysis that fulfil the needs of all stakeholders.	2.2.2.1: E&SED develops a data analysis framework that is based on the needs of stakeholders for informed decision making and planning
	2.2.2.2: data analysis is based on common standards (and in line with international best practice) to strengthen consistency and internal coherence over time
	2.2.2.3: analysed data is available online for access by all stakeholders (and provides summaries for the general public) to strengthen awareness and transparency
	2.2.2.4: data analysis framework is regularly updated for quality assurance and to meet the changing demands of stakeholders
2.2.3 Dissemination E&SED disseminates data findings among stakeholders according to agreed schedules and formats.	2.2.3.1: EMIS Cell develops the reporting calendar for the publication of data and release of findings and reports accordingly
	2.2.3.2: E&SED publishes regular periodic reports to provide updated and timely data to target audiences
	2.2.3.3: updated reports are available on E&SED website and other portals (DCTE, PITE, DE&SE etc)
	2.2.3.4: all stakeholders have access to integrated data through an online portal
2.2.4 Monitoring E&SED designs a well-structured monitoring system to strengthen accuracy and	2.2.4.1: monitoring mechanism are available for data collection, analysis and dissemination to ensure accurate and timely availability of data
	2.2.4.2: E&SED supervises collation of all datasets into an integrated database to avoid duplication and redundancy

| use of data to enhance trust in the system. | 2.2.4.3: monitoring system provides insight into quality assurance aspect of the data collection, analysis, dissemination and use |
| | 2.2.4.4: E&SED monitors supply of data to data users to facilitate planning and informed decision making |

Standard 2.3 E&SED designs and implements a reliable data architecture to enable efficient service delivery for informed decision making, planning and capacity development.

COMPONENT	INDICATOR
2.3.1 Data Architecture E&SED designs an integrated and reliable data architecture that outlines a set of policies, rules, standards and models that govern and define the type of data collected and how it is stored, managed and used.	2.3.1.1 SOPs and policies are available for data collection, storage, analysis and integration
	2.3.1.2 datasets are structured according to relevant international standards, well documented, and secure, according to current security architecture standards
	2.3.1.3 data security and confidentially is ensured through the use of data classification levels, multilevel security system and the capacity to encrypt data
	2.3.1.4 EMIS Cell and IMU ensure their Application Programming Interfaces (APIs) are flexible and easily adaptable to allow for changes and/or advancement in data needs
2.3.2 Service Delivery E&SED designs and monitors a reliable data architecture system that delivers relevant and useful information to enable its users to perform effectively and allowing change to be planned and implemented predictably.	2.3.2.1 data providers ensure that data supplied to policy makers are relevant, accurate and presented in user friendly formats
	2.3.2.2 data collection instruments are carefully designed to avoid duplication of information and lengthy data compilation processes
	2.3.2.3 data provided to demand side users are based on agreed principles including relevance, consistency, usefulness, and timeliness
	2.3.2.4 EMIS staff exercise their duties without external interference

2.3.3 Capacity Development IMU and EMIS Cell design a data architecture system that includes a comprehensive plan for the capacity development of all stakeholders.	2.3.3.1: well-structured system is in place for training needs assessment of all stakeholders on the supply and demand side
	2.3.3.2: a Capacity Development Strategy is available for enhancing the skills of supply side and understanding of demand side of the data
	2.3.3.3: adequate resources are allocated by E&SED for capacity development of data managers and stakeholders
	2.3.3.4: capacity development of data managers and users is part of the annual training calendar developed by E&SED for professional development

Standard 2.4 E&SED develops and operates a mechanism to identify the quantitative and qualitative progress of the system with robust data analyses, feedback and impact assessment to identify areas for improvement.

COMPONENT	INDICATOR
2.4.1 Quantitative and Qualitative Analysis E&SED operates a mechanism to identify the qualitative and quantitative progress of the overall system using different methods (including measurements, trend analysis, analysis of secondary data (e.g., from statistical reports), surveys, tests, case studies, and regular, structured observations) for future planning and to understand the impact of interventions.	2.4.1.1: data analysis framework ensures provision of quantitative and qualitative data in line with the requirements of international standards for educational data
	2.4.1.2: data collection and analysis system provides updated quantitative and qualitative data over a pre-determined period of time for informed decision making
	2.4.1.3: E&SED has tools that ensure usage of updated quantitative and qualitative data for planning and decision making
	2.4.1.4: comprehensive tools are available for collection and analysis of data
2.4.2 Feedback Mechanism E&SED develops and implements a mechanism to identify the efficiency,	2.4.3.1: a well-designed feedback mechanism is designed, implemented and acted upon
	2.4.3.2: feedback mechanism monitors efficacy and effectiveness of the data management and use system

21

effectiveness and relevance of the overall data management system through a robust and regular feedback mechanism.	2.4.3.3: E&SED uses the feedback mechanism to enhance the quality and relevance data available for decision making and planning
2.4.3 Evaluation of Impact E&SED develops and implements an evaluation mechanism to understand evidence of positive or negative impact of the data management system and its use for future planning and decision making.	2.4.4.1: appropriate tools are available and used for the evaluation of the overall data management system
	2.4.4.2: regular formative evaluations are undertaken to understand the impact of the data management system on the use and management of data for planning and decision making
	2.4.4.3: results from impact evaluation are used to improve the data management system
	2.4.4.4: impact evaluation findings help in improving the quality of planning and informed decision making

5.3 Theme 3: QUALITY DATA

Quality data encompasses:

- the ability to collect data accurately, reliably and according to agreed deadlines.

- the capacity to securely save, store and manage data

- the skills to produce high quality, accurate and useful analytical reports

- the skills to make data analysis responsive to the needs to the demand-side users of data, and

- strong levels of trust in the system and service between the supply and demand sides based on accurate and timely data being supplied according to agreed protocols and SOPs as well as according to specific requests that may fall outside the established data reporting requirements.

The E&SED currently does not have any data quality standards or SOPs for data gathering, analysis, verification, validation or management. These standards are necessary to improve the quality of the data service and to build trust in the system so that data are routinely used.

Quality data require:

- methodological consistency so that data are always collected, verified and analysed following consistent procedures in line with international best practice

- technical staff who are able to design, implement and manage a sound set of systems

- strong policies to enhance skills, capacity and capability of the supply-side technical staff and promote professional independence and professionalism

- reliability and integrity, so that all stakeholders have confidence in the system being used and the analysis being produce data

- frequency and timeliness of data collection, production and dissemination to build trust and establish professional routines and approaches that facilitate the collection, analysis and dissemination of data and reports, and

- senior management oversight of the system and service as a whole with special reference to the establishment and management of a robust quality assurance system that clearly defines roles and responsibilities on the supply and demand side of the system and holds people accountable for maintaining them.

The provision of quality data is a challenging area because levels of trust in the data collection and analysis system are low. Not only is there a need to re-design the way the system functions, but the E&SED needs to invest in its human resource to ensure that all stakeholders have the technical and non-technical skills to carry out their roles and responsibilities (irrespective of whether they are on the supply or the demand side of the system).

Theme 3: Quality Data

STANDARD 3.1 *Policy Framework* - E&SED develops and implements a policy to ensure availability of demand-driven data which informs the policy and strategic framework of the education sector.

COMPONENT	INDICATOR
3.1.1 Policy Guidelines E&SED develop clear policy guidelines to ensure availability of demand driven quality data.	3.1.1.1: draft policy document encompassing data management and collection mandates is developed and available
	3.1.1.2: clear roles and responsibilities for collecting, analysing and disseminating educational data are drawn up and implemented

		3.1.1.3: EMIS develops a strategic plan which defines the scope and processes of data collection and management
		3.1.1.4: detailed job descriptions available for all responsible work force of data management units
		3.1.1.5: a clear induction, posting and transfer policy is available to induct and retain required qualified and skilful staff
3.1.2 Linkages Strong linkages between supply and demand side established for setting and up-dating benchmarks and targets in the policy level strategic documents.		3.1.2.1: Joint Working Group is set up for establishment and revision of any policy and strategic level document
		3.1.2.2 supply side develops an agreed time frame for data provision in consultation with the demand side
		3.1.2.3: provision of data as per requirement of demand side on agreed formats is ensured through the senior management oversight mechanism
		3.1.2.4: feedback tool is in place between supply and demand sides
3.1.3 Professional Independence E&SED develop a policy that ensures the professional independence of the data producing institutions (i.e. IMU and EMIS Cell) to ensure reliability of data.		3.1.3.1: policy to ensure and protect the data producing institutions/sections from internal and external influences
		3.1.3.2: SOPs for data producing institutions are drawn up to make them accountable for provision of data
		3.1.3.3: well-defined and clear professional code of conduct is drawn up and implemented to avoid potential conflict of interest
		3.1.3.4: proper guidelines are available and implemented to ensure that the EMIS Cell staff are focused on data management and use issues and not given other duties to carry out
3.1.4 Reliability and Integrity E&SED build strong levels of trust in the system and service between the supply and demand sides based on accurate and timely data as		3.1.4.1: data dictionary is in place to ensure that data are reasonably confined to the definitions, metadata, scope, classifications, and time of recording required
		3.1.4.2: timely notifications/notices are issued for major changes in methodology, source data, and statistical techniques

per agreed protocols and SOPs.	3.1.4.3: data collection, compilation (data editing, transformations, and analysis) and validation techniques are defined in line with international best standards
	3.1.4.4: research and analysis undertaken by the EMIS Cell & IMU for publication are subject to internal review by E&SED to ensure adherence with quality standards and to build strong levels of trust in the system and services

STANDARD 3.2 *Methodology* - EMIS Cell and IMU design and implement a robust framework for collection, verification, validation and timely provision of quality data for effective planning and informed decision making.

COMPONENT	INDICATOR
3.2.1 Data Collection E&SED develop a system for collecting data from all streams of the sector, using a comprehensive and standardized tool which meets the emerging needs.	3.2.1.1: source data are obtained from comprehensive data collection programmes developed in consultation with all stakeholders and meet the emerging needs of the sector
	3.2.1.2: supply side ensures data collection instruments are carefully designed to avoid duplication of information and lengthy processes in compiling data and are fully computable for computer processing
	3.2.1.3: approved and notified timing/frequencies of data collection are developed by data gathering institutions along with guidelines for provision of in-time delivery of source data
3.2.2 Data Verification E&SED adopt an error free mechanism for verification of data.	3.2.2.1: E&SED ensure that the collection and reporting of data is accurate and conducted on time
	3.2.2.2: IMU ensures the cross-checking of reported results with other data sources for error free data reporting
	3.2.2.3: E&SED notifies a checklist consisting of all steps needed during data collection, analysis, verification and validation of data
3.2.3 Data Validation	3.2.3.1: Well-defined standards are developed by data gathering and analysis institutions and approved by the quality assurance oversight mechanism in E&SED and used to

IMU develop a mechanism for validation of data to ensure clean and quality data for analysis and further use.	systematically validate data collection, processes and dissemination
	3.2.3.2: IMU ensures the mechanism for validation of data as a regular feature of its work
	3.2.3.3: Statistical discrepancies in intermediate data are regularly assessed and investigated through third party validation
	3.2.3.4: EMIS Cell ensures that the data are consistent or reconcilable with those obtained through other data sources and/or properly analysed
3.2.4 Timeliness EMIS data and statistics are produced periodically according to agreed deadlines.	3.2.4.1: IMU ensures systematic follow-up procedures to ensure the timely delivery and receipt of source data
	3.2.4.2: statistics derived from the administrative school census are disseminated within 3 months after verification
	3.2.4.3: approval processes for the publication of education statistics is completed by EMIS Cell according to agreed deadlines
	3.2.4.4: EMIS Cell & IMU develop a detailed annual plan for periodicity and timeliness and shared with demand side stakeholders
3.2.5 Data Analysis EMIS Cell adopt a compatible and flexible approach for analysing data to make data analysis responsive to the needs to the demand-side users of data.	3.3.5.1: overall structure, concepts and definitions follow internationally accepted standards, guidelines, and good practice
	3.3.5.2: available data sources provide an adequate basis to compile statistics
	3.3.5.3: statistical techniques employed conform to sound statistical procedures, and are publicly documented
	3.3.5.4: projections/estimation of missing data (including demographic projections) are computed according to internationally agreed techniques

STANDARD 3.3 *Skills and Resources* - E&SED ensures availability and deployment of human, physical and financial resources to strengthen the supply-side for provision of reliable and comprehensively analysed data.

COMPONENT	INDICATOR
3.3.1 Strengthening of EMIS Cell & IMU E&SED develop and initiate a comprehensive programme for strengthening of EMIS Cell and IMU to improve their service delivery.	3.3.1.1: E&SED design and implement a comprehensive capacity development strategy for strengthening of EMIS Cell & IMU
	3.3.1.2: E&SED develop standards for allocating financial and human resources
	3.3.1.3: E&SED ensures the EMIS Cell and IMU are sufficiently equipped with latest IT equipment and the necessary skills to make full use if them
	3.3.1.4: EMIS Cell ensures adequate security, safety and backup measures of all data
3.3.2 Allocation of Resources E&SED approve a needs-based and regular resource allocation for EMIS and IMU to meet the challenges of provision of quality data.	3.3.2.1: ES&ED ensures regular budget allocation for maintenance and operational cost of the EMIS function and its proper utilisation
	3.3.2.2: E&SED ensures adequate human, physical & financial resources in EMIS and IMU
	3.3.2.3: E&SED ensures adequate and timely release of budget for printing and publishing ASC reports and data
3.3.3 Skilled and Well-Equipped Human Resources A restructuring plan with regular capacity development measures is in place to equip EMIS Cell and IMU with skillful and well-equipped work force with the capacity to securely save, store and manage data.	3.3.3.1: E&SED ensures a comprehensive mechanism for developing the skills of the staff to address new and emerging data requirements
	3.3.3.2: E&SED actively promotes the professionalism of EMIS staff to carry out their technical expertise by activating the quality standards
	3.3.3.3: EMIS Cell and IMU follow well-defined and clear professional code of conduct to avoid potential conflicts of interest

STANDARD 3.4 *Access and feedback -* Demand-side users work with EMIS Cell and IMU (supply-side) to develop a data system which improves access, communication and feedback and strengthens planning and use of resources.

COMPONENT	INDICATOR
3.4.1 Availability of Data EMIS develop and implement a mechanism to ensure timely availability of demand-driven data.	3.4.1.1: EMIS ensures that processed data are presented in clear, understandable and user-friendly formats
	3.4.1.2: E&SED ensures the processes are in place to focus on quality of data
	3.4.1.3: E&SED ensures the SOPs facilitate easy access to data, according to need
3.4.2 Reporting and Dissemination EMIS develop and implement SOPs for timely reporting and dissemination of data to produce high quality, accurate and useful analytical reports which fulfil the needs of all stakeholders.	3.4.2.1: EMIS develop SOPs for timely reporting and dissemination of data
	3.4.2.2: EMIS ensures that data reports are disseminated and are presented in clear and understandable formats
	3.4.2.3: EMIS Cell & IMU oversee comprehensive guidelines for archiving of source data and statistical results
	3.4.2.4: E&SED develop a data dissemination strategy for effective awareness and utilisation of data
3.4.3 Communications E&SED develop a well-recognised communications strategy is in place to cater to the needs of demand side users of data.	3.4.3.1: E&SED develop a comprehensive communications strategy for effective dissemination of data and awareness of end users
	3.4.3.2: levels of detail are adapted to the needs of the intended users
	3.4.3.3: good quality data reports and analysis are made available to data users according to published deadlines
	3.4.3.4: EMIS Cell ensures publication of Education Atlas as a regular feature of its work
3.4.4 Feedback E&SED develop and implement a structured feedback mechanism for all the stakeholders to improve the	3.4.4.1: a well-structured feedback mechanism incorporating follow-up and solutions where necessary is in place, linked to the quality assurance mechanism
	3.4.4.2: a robust monitoring & evaluation policy is in place utilising feedback from stakeholders

quality of data and service delivery.	3.4.4.3: user satisfaction is monitored on a regular basis and is systematically followed up
	3.4.4.4: a well-defined complaint management and redressal system is in place and results are published and disseminated to supply and demand side stakeholders

5.4 Theme 4: UTILISATION OF DATA FOR DECISION-MAKING

Utilisation of data for decision-making refers to the ultimate purpose of operating an efficient and effective data management system and service. Data are needed by all demand-side stakeholders in order to make decisions at all levels of the education system, from the classroom to the school-level; from district provision and performance to strategic planning in the institutions of the E&SED; and to monitor the implementation of the Education Sector Plan.

In this sense, utilisation of data for decision-making cuts through the school effectiveness and school improvement concepts and supports its achievement as data are required in all areas – policy, planning, budgeting, research and development, strategy, management, assessment, teaching and learning, and consultation with parents and communities.

Utilisation of data for decision-making operationalises four important principles of a system and service based on quality standards for data management and use:

- **data reveal** the extent to which students are learning and where there are gaps and weaknesses in the system

- **data enable** education stakeholders to be supported, resources to be properly allocated, robust M&E and relevant professional development

- **data enhance** efficiency and effectiveness of service delivery, and

- **data help** the E&SED to assess the return on its investment in education.

In order to work effectively towards utilisation of data for decision-making the following are required:

- availability of data to end users – ensuring that the relationships between suppliers and users are managed with well-defined roles and responsibilities so that they can access and use data when they need to and are not restricted by poorly considered issues of permissions which place restrictions on an effective system

- operational use – ensuring that data are being used on a regular basis as business as usual rather than on an ad hoc basis

- accessibility – ensuring that the SOPs facilitate the easy access to data according to need. This requires good quality data reports and analysis to be made available to data users, rather than large amounts of raw data being posted on platforms indiscriminately

- dissemination of data and analysis in terms of results, findings and lessons learned, and

- training is required for all levels of demand-side users of data in how to read, understand and make use of EMIS reporting frameworks so that capacity and capability across the system is uplifted.

The development of a standardised and coherent EMIS function - to address the confusion of multiple datasets, build trust in the system and service, and revive a culture of data-driven planning in E&SED - is an important component of effective utilisation of data for decision-making. An integrated EMIS will provide a more robust framework to guide planning and management and avoid duplication. It will be essential in establishing an efficient and effective IMU authority and articulating its relationship to the EMIS Cell and to the demand-side users of data in the E&SED.

Theme 4: Utilisation of Data for Decision-Making

STANDARD 4.1 EMIS Cell & IMU make analysed data available in user-friendly formats for the planning of development schemes, budgeting, resource allocation and monitoring & evaluation.

COMPONENT	INDICATOR
4.1.1 Data Analysis E&SED ensure evidence-based planning & decision making.	4.1.1.1: EMIS Cell generates data analytical reports as per the requirement of the end users
	4.1.1.2: EMIS Cell ensures that analytical reports are made available in April for budgeting and planning purposes and published on the E&SED website
	4.1.1.3: reporting format is clear and understandable and may be easily interpreted as per the requirement of the data users for decision making and forward planning

	4.1.1.4: all development initiatives are feasible and evidence based
4.1.2 User-friendly Data Formats Both EMIS Cell and IMU provide data in easily understandable formats.	4.1.2.1: data formats are easily understandable and properly used for planning and management purposes.
	4.1.2.2: data formats are relevant and appropriate to the needs of data users
	4.1.2.3: data formats are compatible with the software in use by data users
	4.1.2.4: data are available in different formats i.e. Excel, Access and GIS
4.1.3 Timely, Available and Accessible Data Valid and reliable data are available to all concerned units at the right time according to their needs and demands.	4.1.3.1: data are made available according to agreed and published deadlines
	4.1.3.2: reliable and relevant data are available to all E&SED stakeholders on shared platforms
	4.1.3.3: analysed data are accessible on the E&SED website in formats appropriate to non-technical users
4.1.4 Software Tools for Data Accessibility IMU and EMIS Cell develop an interface to access data for timely decision making.	4.1.4.1: software/interface tool is developed, piloted and implemented for data users
	4.1.4.2: software tool is disseminated and shared with all data users
	4.1.4.3: access rights are assigned to end users with supporting technical advice provided
	4.1.4.4: user feedback on the software tools are incorporated in the data management and use monitoring system and fed into the quality assurance mechanism

STANDARD 4.2 E&SED develops and implements a capacity development strategy to strengthen knowledge, skills and understanding and facilitate the use of data by the demand-side institutions of the E&SED.

COMPONENT	INDICATOR
4.2.1 Capacity Development Strategy E&SED develops a Capacity Development Strategy for data users to facilitate better service delivery	4.2.1.1: a comprehensive capacity development strategy is developed by E&SED to ensure that EMIS end-users have the requisite knowledge and skills to interpret, manipulate, and utilise the data produced by the system
	4.2.1.2: regular training is delivered to ensure effective utilisation of EMIS data to inform decision making at all levels of the education system
	4.2.1.3: a monitoring, evaluation and follow up system is set up to regularly monitor the implementation of the CD strategy
4.2.2 Strengthening of Data Analysis and Use skills Capacity Development Strategy includes data interpretation and its utilisation for better service delivery.	4.2.2.1: data are easily accessible and presented in a clear and understandable manner that facilitates proper interpretation and meaningful comparisons
	4.2.2.2: data end-users have the ability to interpret and utilise EMIS reports to feed into planning and monitoring purposes
	4.2.2.3: software/interface tool is developed to facilitate access to data for end users
4.2.3 Implementation of Capacity Development Strategy: A comprehensive capacity development plan is developed and implemented by E&SED	4.2.3.1: a comprehensive capacity development plan for the demand-side users of data is developed by E&SED, overseen by the head of the quality assurance mechanism, implemented and periodically monitored and evaluated

STANDARD 4.3 E&SED constitutes and empowers a working group of supply and demand stakeholders to develop SOPs for system-wide collaboration and review of data requirements.

COMPONENT	INDICATOR
4.3.1 Revision of Data Requirements Data are supplied according to the requirements of the data users for planning and decision-making purposes.	4.3.1.1: data needs of end users are mutually assessed with data suppliers
	4.3.1.2: data collection instrument is regularly reviewed and updated
	4.3.1.3: ADP formulation and budget preparation time frame are notified for information of data users and suppliers
	4.3.1.4: data fulfil the needs of end users
4.3.2 Data Sharing and Feedback Mechanism Feedback of data users on the quality of data is institutionalised for the improvement of the system.	4.3.2.1: data end users give regular feedback to suppliers and to the quality assurance mechanism on the utility of data
	4.3.2.2: data supply report is reviewed by the quality assurance mechanism in the light of users' feedback
	4.3.2.3: data management system is periodically reviewed and improved taking into consideration feedback from all stakeholders

STANDARD 4.4 E&SED develops a quality assurance mechanism to minimise errors in the system, maximise the use of data for planning and management, and oversee accountability and trust in the system.

COMPONENT	INDICATOR
4.4.1 Development of Data Quality Assurance Mechanism The management of the E&SED will monitor the quality of data and its utilisation for informed decision making.	4.4.1.1: a well-defined data quality monitoring strategy is in place and coordinated by the senior management of E&SED
	4.4.1.2: regular feedback on data utility is received and reviewed for quality assurance purposes
	4.4.1.3: adjustments are made to analytical reports in the light of data monitoring reports

		4.4.1.4: evidence based realistic decisions are made by all units of E&SED
4.4.2	**Minimising Errors In The System** Regular validation exercise is carried out to ensure quality and reliability of data by fulfilling the needs and requirements of demand side users of data.	4.4.2.1: data validation mechanism is set up and actively used at all stages
		4.4.2.2: data relevancy is regularly checked and updated
		4.4.2.3: data analysis reports effectively fulfil the requirements of demand side users
		4.4.2.4: data reports are regularly reviewed, interrogated and quality ensured
4.4.3	**Optimal Use Of Data** Data users are held accountable for using data in the planning and development of education services.	4.4.3.1: data reports are used for checking feasibility of developmental schemes
		4.4.3.2: budgets are prepared and distributed according to evidence based on data
		4.4.3.3: E&SED process the planning and budget proposals only if supported by relevant data.
		4.4.3.4: Monthly and quarterly reviews of ADP and budget utilisation are based on valid, up to date data.
4.4.4	**Strengthening Trust In The System** E&SED will ensure timely availability of reliable data to improve service delivery.	4.4.4.1: analytical reports are available on time for planning & management purposes
		4.4.4.2: time-bound reports are supplied to data end users
		4.4.4.3: internal and external efficiency and effectiveness of the E&SED is improved on the basis of real time data
		4.4.4.4: stakeholders are satisfied with the service delivery of E&SED according to their feedback to the quality assurance mechanism

6. The Design Process of the KP Education Data Quality Standards

The Education Data Quality Standards have been developed through a highly participatory and consultative process involving active representation of all the concerned institutions of the Elementary and Secondary Education Department (E&SED) (see Annex A for the full list of officials involved in designing the education data quality standards). The assignment was commissioned by the Khyber Pakhtunkhwa Education Sector Plan Support Programme (KP-ESPSP) as part of their Capacity Development Strategy and aims to help the E&SED develop skills and standards in relation to data management and use (supply and demand sides), strengthen planning and decision-making processes and contribute to the delivery of improved teaching and learning across KP.

The process was designed to support the stakeholders to analyse the key functions involved in data collection, analysis, dissemination and use to facilitate thinking about the most appropriate set of standards and indicators that define these functions and use this output to manage the data management and use function in E&SED more effectively and sustainably.

The outcome of this process has resulted in a set of standards linked to international best practice as outlined by the World Banks's SABER work. These standards will serve as a core document for designing a strategic framework for implementing, functionalising and monitoring the standards (linked to quality assurance oversight) with clearly defined roles and responsibilities and SOPs across E&SED.

A core committee was notified by the E&SED to serve as the central body for setting the data quality standards. The committee was set up as an outcome of the recommendation for developing data quality standards emanating from the Bhurban seminar on the needs assessment study of the EMIS function (held on July 29 – 30 2017), and elaborated through a comprehensive systems analysis study of data management, flow and use in the Department carried out between June – November 2018.

The design methodology adopted focused on a mix of technical assistance and facilitation drawing upon the collective knowledge of the key stakeholders responsible for the development, maintenance and implementation of these standards. The approach and methodology were designed to create strong ownership among the education stakeholders through their hands-on involvement in the development process.

7. The KP Education Data Quality Standards Stakeholders: Supply & Demand

The process and methodology used brought together data suppliers (principally the EMIS Cell and IMU) and the demand-side users of data (from all the institutions that fall under the E&SED). Part of the reason for this was not only to emphasise both the nature of the **system** of data management and use itself, but also to stress the fact that the data function in E&SED needs to be understood as a **service** from the supply side to the demand side. And all stakeholders need to understand their role and responsibility to make both the system and service functional and effective and, in the process, strengthen accountability and collective responsibility for its success.

The structure of the E&SED's stakeholders is outlined below. The supply-side stakeholders are coloured yellow (principally the EMIS Cell and the IMU, but also including other suppliers of data) and the demand-side stakeholders are coloured green (all the institutions of the E&SED that need data to inform their own planning, monitoring and decision-making).
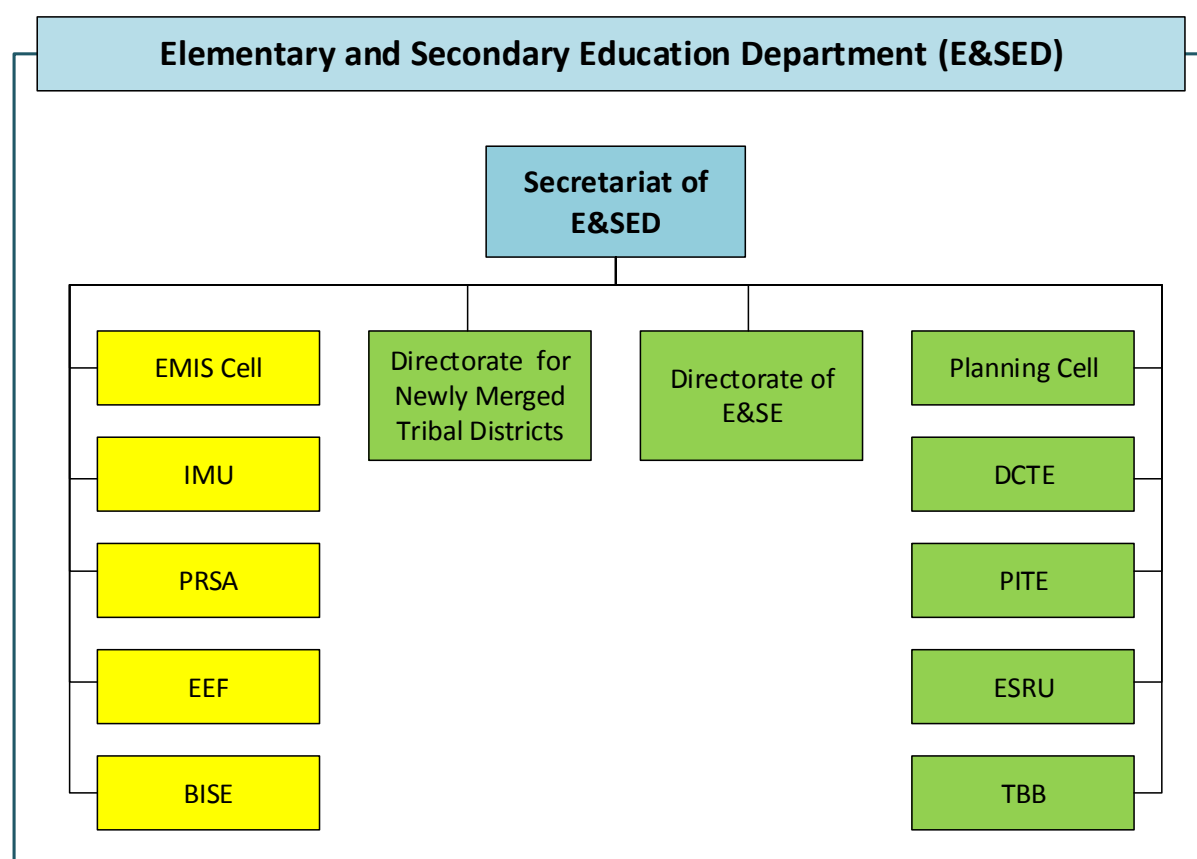
Elementary and Secondary Education Department Structure

8. The Implementation of the KP Education Quality Standards: Next Steps

The implementation of the new KP Education Data Quality Standards is an essential step in ensuring their relevance, applicability and usefulness to the work of the E&SED.

There is a history of implementing similar quality-based initiatives in KP which the E&SED can refer to as it decides how best to turn these Data Quality Standards into reality. The most relevant of recent initiatives that provide the essential background to this work on data quality and how it drives system improvement include:

- **Curriculum 2006:** The first standards/outcomes based curriculum in Pakistan
- **National Education Policy 2009:** with a strong underlying focus on quality standards
- **Education Sector Planning:** (KP, Punjab, ICT, Balochistan, Sindh, ICT)
- **18th Constitutional Amendment:** Devolution of key functions (including curriculum and standards) to the provinces
- **Interprovincial Coordination Mechanism:** (IPEMC, NCC)
- **Minimum National Standards (in process):** Outlining standards for all aspects of quality education across the provinces (learners, teachers, curriculum, textbooks, assessment, learning environment), and
- **Quality Standards for Teacher Educators in KP 2018:** Contributing to the professionalisation of the teacher education function in KP.

In terms of next steps for the E&SED, the working group developed an outline of implementation actions that will facilitate the dissemination, understanding and adoption of the KP Data Quality Standards going forward. In all cases, these actions take into consideration the Newly Merged Tribal Districts and the need to implement the Data Quality Standards (DQS) across the province as a whole:

IMPLEMENTATION ACTIONS	PURPOSE	RESULTS
Establishing the principle that the Education Data Quality Standards apply equally to the Newly Merged Tribal Districts.	Alignment and integration of the two EMIS functions in KP and the former FATA. They are very similar in structure so the transition to a merged system based on the principles of quality standards provides a management gain to the E&SED.	A consistent, quality standards- based approach to data management and use across KP. Streamlined and consistent management of the system resulting in better planning, monitoring and decision-making.

IMPLEMENTATION ACTIONS	PURPOSE	RESULTS
Dissemination of the Education Data Quality Standards and awareness raising with all managers of E&SED (provincial and district level) covering the purpose, content and importance of data quality standards to the work of all E&SED staff.	Establish joint understanding of the data standards Establish consensus about their importance and usefulness Enable discussions on how best to incorporate them into business as usual.	Strengthened ownership of the Standards enhancing the prospects for successful adoption and implementation.
Approval and notification of the Education Data Quality Standards by the senior management of the E&SED	Demonstrate the importance of this initiatives to the work of the E&SED in driving up standards	Data Quality Standards become a routine part of the E&SED's work and establish a new level of professionalisation in the data management and use function.
Develop awareness, understanding and commitment in the Education Data Quality Standards and identify champions to carry the work forward.	The new political leadership in KP need to be briefed about the Data Quality Standards work and its benefits so that they can see how it helps to achieve higher level education policy objectives. Make use of the remaining EU TA team in the short-term to support this work (e.g. through the seminar on institutionalisation of innovations in E&SED planned for late January 2019). It will also be important to discuss how the DFID TA can be utilised to carry the work	Championing of the Quality Standards work will raise its profile and bring it to the attention of stakeholders outside the E&SED. The E&SED can, in turn, be seen as an innovator in the area of raising standards of planning and decision-making in the social sectors in KP and Pakistan as a whole.

IMPLEMENTATION ACTIONS	PURPOSE	RESULTS
	forward through 2019 and 2020.	
Implementation framework developed (including monitoring and evaluation approach), including pilot exercises to test out concepts and approaches	E&SED can make use of the services and insights of the members of the Data Quality Standards Core and Technical Committees to draw up a feasible implementation plan (including any budgetary considerations that need to be factored in). The EU TA team can also be used in the short-term until the end of the KP-ESPSP programme in February 2019. For the pilot exercises, experience can be drawn from those E&SED staff members at DCTE and PITE who have recently completed their own pilot of the Teacher Educator Quality Standards in KP.	Testing out concepts which will enable fine-tuning to the Standards framework and make it fit for roll-out across KP.
An Education Data Quality Standards Task Force with responsibility for quality assurance and oversight should be formed by the Secretary E&SED	As the Data Quality Standards have been developed by KP staff from all of the principal institutions under E&SED there is a strong knowledge base to contribute thinking to the design of a new quality assurance and oversight function. The establishment of a quality assurance and oversight mechanism will	Quality assurance and oversight will help to raise standards by holding people accountable and raising levels of quality across the E&SED in how data are gathered, analysed and used. This can feed into the analysis that needs to inform the development of the new education Sector Plan in 2019, and contribute thought leadership on education

IMPLEMENTATION ACTIONS	PURPOSE	RESULTS
	also enable the implementation of the recommendations of the Systems Analysis Study in 2018 in enhancing how data flows around the E&SED and leads to better planning and decision-making.	quality issues to the new government's education strategy.
Identifying the custodian of the Education Data Quality Standards in E&SED	In addition to the senior management oversight of the DQS as a whole there should be one institution that is responsible on a day to day basis for the implementation of the DQS. This could be the **EMIS Cell** working hand-in-hand with the **Planning Cell** so that supply and demand elements work together on the implementation arrangements.	Strong technical contribution on the supply side of data gathering, analysis and reporting to inform the system. Strong non-technical contribution representing the demand side identifying what is required for better planning and decision-making. Both sides working on an integrated monitoring and accountability system feeding into the senior management quality assurance and oversight function strengthen the operation of the system and its results (better planning and more use of data to guide decision-making).
Draw up a Capacity Development Strategy and Plan for all E&SED stakeholders: supply and demand side	A significant number of officers from E&SED have been actively involved in the development of the DQS. Their insights can be used to develop a capacity	Greater confidence among all officers of the E&SED to use data quality standards to guide their work. This results in better planning, monitoring and decision-

IMPLEMENTATION ACTIONS	PURPOSE	RESULTS
	development strategy and plan for the E&SED to enhance technical and non-technical skills in the management and use of data for better planning and decision-making.

In the longer term the E&SED can seek TA support from DFID to finalise the Strategy and Plan and implement it across the E&SED. | making. In turn this drives up standards in how resources are used and targeted which will contribute to better teaching and learning outcomes in schools. |

Annex A: The KP Education Data Quality Standards Development Team

Advisors:

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Workshop 1: 16 – 17 September 2018

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Mr. Shah Hussain	Assistant Director – II	EMIS Cell
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Mr. Kamran Afridi	Android Developer	IMU
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Mr. Imran Kazim	Planning Officer	Planning Cell
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Workshop 2: 20 – 21 October 2018

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Workshop 3: 10 – 11 November 2018

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Workshop 4: 05 - 06 December 2018

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