EMIS in Pakistan: Process, People and Structures

Examining Policy Issues in Education Data

Contents

1.   EMIS in Pakistan

1.1   Federal EMIS: NEMIS

The compilation of education statistics in an automated environment began in Pakistan in the 1980s. Several disparate and diverse initiatives were brought together in the early 1990's through the National Education Management Information System (NEMIS). Subsequently, NEMIS has received continuous funding from various donors, under the platform of various development programmes (including the Social Action Program). NEMIS represents the federal government's education data collection, collation, compilation and management agency, although NEMIS has never existed as an autonomous program, but rather under the aegis of the Central Bureau of Education—until 1993—and since then under the Academy of Educational Planning and Management (AEPAM).

NEMIS's primary responsibility is to collect data from the provincial EMIS's and produce an annual report that summarizes education data for the entire country.

1.2   Provincial EMIS Units

Provincial EMIS's exist in all four provinces, with FANA and AJK also having regional EMIS programs. In addition, the FATA and ICT provide input to AEPAM to help complete the spectrum of administrative units that make up Pakistan. Although NEMIS provides advisory services to these regional EMIS units, it has no formal authority in their affairs.

Provincial EMIS's vary in their methodologies, as well as their organizations structures. While Punjab, NWFP and Balochistan house EMIS within the provincial Directorates of Education, Sindh's EMIS unit is a separate wing within the Education Department. During the course of this study, field visits were made to the Sindh and Balochistan EMIS units, and most of the analysis herein will therefore focus exclusively on these two provinces.

1.3   District EMIS Cells

At the district level, District EMIS Cells, in theory at least, are responsible for the collection of data and the transmission of that data to the provincial units/wings. In the context of devolution and the ESR, the nature of district government, and specifically the district education departments, several important issues emerge from an examination of EMIS.

2. The EMIS Process

Most of the work being done with regards to education data is driven by donor agencies. DfID has worked extensively on EMIS at both the federal and provincial levels, particularly in the Punjab. GTZ has worked with districts and the provincial government in the NWFP. UNICEF has long supported EMIS activities in both Balochistan and Sindh, although UNICEF's emerging orientation to grassroots involvement, particularly in Balochistan is bringing about a corresponding marginalization in terms of direct support for BEMIS.

An examination of EMIS activities in Pakistan can be conducted in two broad categories. First in terms of the process, and second in terms of the substance. There is naturally significant overlap between these categories particularly when viewed from the specific lens of policy, planning and monitoring and evaluation.

Within an examination of the EMIS process, identifying a unit of analysis to assess the system is critical. It is conceivable that several different units of analysis be used. This study essentially used one—the public sector employee. Within that context, it also examined the organizational structures of EMIS.

This approach is significant because it places the primary center of analysis on human capacity— the very foundation of ESR. From the human capacity lens, the unit of analysis of EMIS is the public sector employee, and the function(s) he or she performs in getting data from the ground, through the several stages of transmission (and/or analysis), to the end user (theoretically, the policymaker at the district, provincial and federal levels).

Figure 2.1: The Flow of EMIS Data
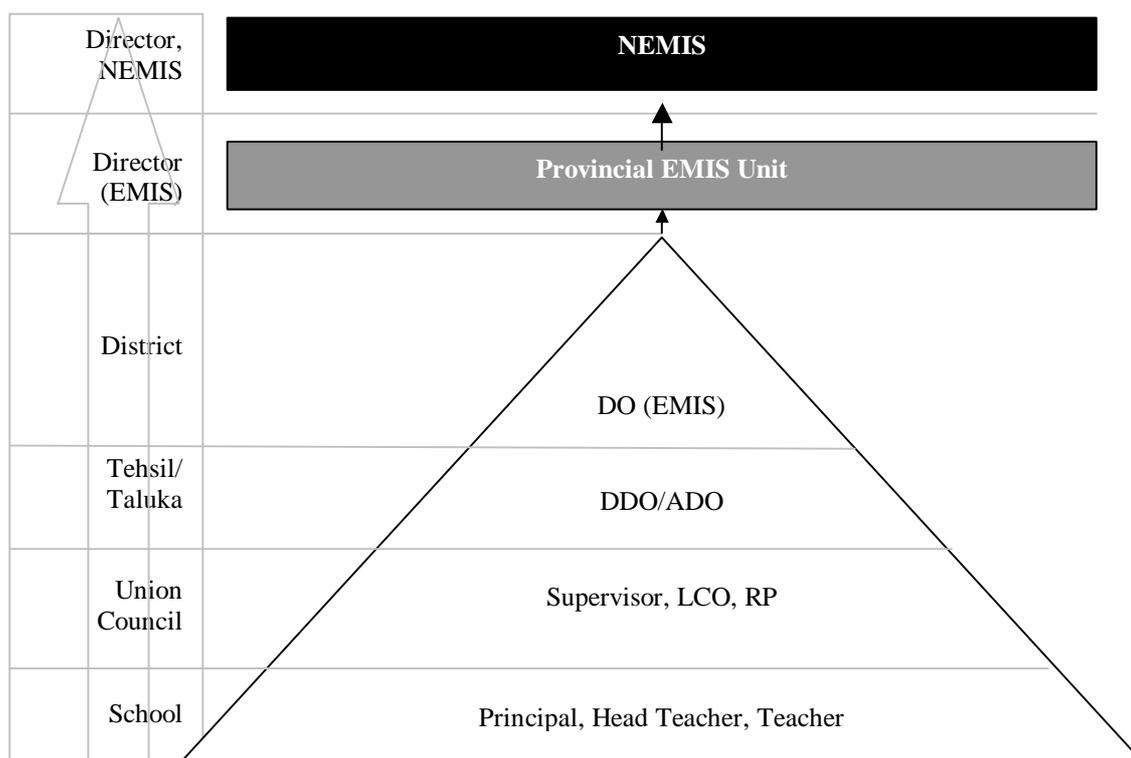
Since, at least theoretically, EMIS is a cyclical process, the analysis of EMIS can begin at any given node, without a compromise on the quality of analysis. However, the logical sequence of events that leads to the publication of NEMIS's annual "School Education Statistics" begins with the generation of the questionnaire forms that provinces send to the districts for completion.

2.1 Step 1: Questionnaire Preparation

NEMIS sends out guidelines to the provincial EMIS units on the kind of data that is required by the federal government. The NEMIS Technical Committee (See Appendix 2) is responsible for preparing these guidelines. The government's requirements are dictated by various commitments to international agreements as well as multi-and bi-lateral donor funded programs of the federal government, including Education for All (EFA), and the Poverty Reduction Strategy Paper (PRSP). The provinces then develop province-specific questionnaire forms (See Appendix 1) incorporating both provincial and federal needs. BEMIS elicits feedback on a draft of the questionnaire from civil society, particularly partner donor agencies (i.e. UNICEF), whereas SEMIS has established a Steering Committee composed of government, civil society and donor agencies, for oversight of all SEMIS related issues, including questionnaire development.

2.1.1 Approximate Duration

The questionnaire is prepared over the course of approximately one month and generally commences in September/October.

2.1.2 Key Players

Institutions	Individuals
NEMIS Technical Committee	Director/Joint Director, NEMIS
Federal Ministry of Education	Systems Analyst, NEMIS
Provincial EMIS Units/Directorates	Director/Deputy Director, EMIS (Province)
Provincial EMIS Steering Committee(s)	:

2.2 Step 2: Preparation for Survey

The collection of data from schools for EMIS is an annual event called the Annual School Survey. Several events occur before the census actually takes place. NEMIS provides support to the provinces in this preparation, in particular by hosting workshops to apprise provincial EMIS personnel on key issues and red flags. District education department employees, from the EDO (Education), to the DO (EMIS), to the lowest indivisible unit of data collection, i.e. the data collectors themselves, undergo a series of workshops conducted by the provincial EMIS units. The intended impact of these workshops is to generate data that is accurate and precise.

It is at this stage that the provinces also conduct scheduling exercises, establishing major milestones and deadlines, and defining a critical path for the process.

Once the capacity building and scheduling activities are completed, districts are sent the questionnaire forms by the provincial EMIS units. In Balochistan, the delivery of forms is an informal process, with either teachers (data collectors) collecting the forms from BEMIS themselves—when they are in Quetta on other business, or the EDO (Education)'s office picking up the forms. In Sindh, forms are mailed to the districts. It is the DO (EMIS) that is the recipient of the forms however, in the absence of a DO (EMIS), either the EDO (Education), or her/his designee [often the DO (Elementary)] receive the forms.

The DO (EMIS) distributes the forms to ADOs (male and female) at the Tehsil/Taluka level. The ADOs in turn distribute the forms to data collectors, i.e. Learning Coordinator, RP, Supervisor, Head Teacher, Principal, Principal (Technical).

2.2.1 Approximate Duration

Preparation for the survey, including all training and capacity building activities takes approximately 3 months.

2.2.2 Key Players

Institutions	Individuals
NEMIS: Provision of Training	Systems Analyst, NEMIS
	Consultants/Trainers, NEMIS
	Programmers, Provincial EMIS
Provincial EMIS: Recipient of training from NEMIS, provision to districts	EDO, Districts
	DO (EMIS), Districts
	ADO, Districts
District Education Office: Recipient of training from Provincial EMIS	Supervisors, Districts
	LCOs, Districts

2.3   Step 3: Data Collection / Survey

The data collectors are often administrative managers at the school (or institution) for which they are filling the form. In fact the only exception to this are the Supervisors and Learning Coordinators (both positions are at the Union Council level and were established to facilitate the quality of primary and middle schooling). The forms therefore are filled out by the chief administrators (or Supervisors and LCOs) of each school. This means that there is no inherent mechanism to ensure impartiality in the data collection process. The data collector needs simply to use her/his records to fill out the forms, rather than conduct a "live survey". Much of the education data collected therefore represents, in a sense, secondary, rather than primary data.

2.3.1 Approximate Duration

The data collection process is essentially a one-day activity. It is however a one-day activity for each school. Different data collectors will fill out the questionnaire forms on different dats, moreover, any given district may have thousands of schools. In Balochistan, even with relatively fewer schools, geographical distances and the underdeveloped state of government's communication systems mean that the physical data is disparately spread across the district.

2.3.2 Key Players

Institutions	Individuals
Union Councils (Schools, Colleges, etc.)	Learning Coordinator
	RP
	Supervisor
	Head Teacher
	Principal

		Principal (Technical)

2.4   Step 4: Transfer of Data Back to the Province

Once completed, the forms are returned to the ADOs, who then deliver them to the DO (EMIS), or the designee of the EDO (Education). Currently there is no means of data verification. The consolidation and/or entry of data at the district level is a matter of chance, with no institutional mechanism to ensure such a milestone in the process. In Sindh, there are currently only three districts that enter the data into their own district EMIS. SEMIS therefore receives almost all its data in hard copy format, which results in large sacs of forms being delivered to the SEMIS office. The informal method of the disbursal of questionnaire forms, and data collection is mirrored in getting the data back to the provincial EMIS units.

Table 2.1

Year of Data Collection	Date of Publication (according to publication)	Approximate Lag (in months)
1992 – 1993	August 1995	26 months
1993 – 1994	1996	30 months
1994 – 1995	1996	30 months
1995 – 1996	November 1995	-7 months
1996 – 1997	January 1999	18 months
1997 – 1998	November 1999	17 months
1998 – 1999	2002	30 months
1999 – 2000	2002	18 months
2000 – 2001	2003	18 months
	Average Delay from End of FY	**20 months (One year and 8 months)**

2.4.1   Approximate Duration

This lack of streamlined and institutionalized processes to transmit the data back to the provincial capital results in long time-lags. Different districts claim to take different lengths of time to deliver the data to the province, and different public employees within a given district office also claim to take different lengths of time to deliver the data to the province. In Khairpur, the DO (SEMIS) claimed that the total turnaround time of forms being sent out and received by his office was no longer than 8 days. Minutes later however, the ADO from one of Khairpur's taluka's contradicted the DO in his presence, stating emphatically that LCO's and Supervisors took weeks, sometimes months to return data. Such conflicting information is common across most districts. According to SEMIS the average duration between when they send the forms to the districts and when they receive them takes as long as eight months. BEMIS's experience in this regard is similar with recent lags between forms sent and received averaging between six months and ten months. The average length of delay according to NEMIS' own report however is 20 months, even when accounting for the discrepancy of the 1995-96 data, which seems to have been published 7 months before the fiscal year even ended.

2.4.2 Key Players

Institutions	Individuals
District Education Office	EDO (Education)
	DO (EMIS)
Provincial EMIS Unit	ADO (Male & Female)
	Director (EMIS)—province

2.5 Step 5: Data Consolidation at the Provincial EMIS

At the provincial EMIS premises, data from the districts is entered into the provincial database. Since each province has a distinct questionnaire, data fields for each province are different. In both Sindh and Balochistan, efforts for data validation take place at this stage, and mostly involve the establishment of informal contact with the DO (EMIS) in the districts, and requests that they make personal visits to the field to validate the entries for a small percentage of the schools in their districts. There is no random selection of these schools, and the DO's volition is the primary determinant of which school's data is verified. Personal visits themselves are not an assurance of the validity of the data, because in many cases, the DO asks the chief administrator of the school she/he is visiting to affirm the data being verified.

2.5.1 Approximate Duration

The volume of forms that needs to be entered, coupled with the limited human resources available to provincial EMIS units results in a cumbersome and time-consuming data entry process. Both Sindh and Balochistan claim that data entry alone takes approximately one month—with provincial EMIS staff working nearly round-the-clock.

2.5.2 Key Players

Institutions	Individuals
Provincial EMIS Unit	Computer Operators, EMIS
	Programmers, EMIS
	System Analyst, EMIS

2.6 Step 6: Provincial EMIS Report Generation

Once the data has been entered into the provincial database, it is ready for publication as a provincial report. The generation of such reports is an internal exercise, with no discernable effort for the publication of education data, or the placement of the database in a format and location accessible to the citizens of the districts (or province). The EMIS units do publish a statistical profile of the province, but these documents carry little information—Balochistan's Statistical Profile of School Census 2002 is two double sided A4 sheets, folded in half, with a breakdown of schools, enrollment and teachers; disaggregated by gender and location (urban/rural). There is also limited time-series data on the number of schools. The profile is printed and photocopied for disbursement to those who request information from the BEMIS cell. Detailed district reports on education statistics are prepared by BEMIS, for dissemination among the districts, and at the provincial level, ostensibly for policymakers at the Education Department, and Directorate of Education (Schools).

2.6.1 Approximate Duration

Once the data is ready for publication in reports and profiles, BEMIS claims it takes approximately ten to fifteen days to generate district reports. SEMIS on the other—which does benefit from higher funding and a more sophisticated operation, is able to produce reports on turnkey basis, directly from its database.

2.6.2 Key Players

Institutions	Individuals
Provincial EMIS Unit	Computer Operators, EMIS
	Director EMIS
	Programmers, EMIS
	System Analyst, EMIS

2.7 Step 7: Data Transfer from Province to NEMIS

The generation of provincial reports represents the penultimate stage of the province's involvement in the EMIS cycle. The final role of the provinces is to transmit/transfer the consolidated education data for the province to NEMIS at the AEPAM. This represents the first instance of the movement of data in an exclusively electronic format. Sindh and Balochistan burn the data onto CD with the respective fields of each province as the database's organizational structure.

2.7.1 Approximate Duration

NEMIS claims that it takes several months and at times up to a year from the start of the process (questionnaire preparation) to when it begins receiving data sets from the provinces.

2.7.2 Key Players

Institutions	Individuals
NEMIS	Director/Joint Director, NEMIS
	System Analyst, NEMIS
Provincial EMIS Unit	Data Input Operator, NEMIS
	Director EMIS
	System Analyst, EMIS

2.8 Step 8: Database Streamlining and Entry at NEMIS

Once the data is received by NEMIS it needs to be streamlined to match both the format of NEMIS's annual publication "Pakistan School Education Statistics", as well as the data requirements of donors, aid programs and policymakers. Since each province and region has an independent database, the fields from these databases do not match each other. In addition to this numerical problem, there exists the challenge of interpreting different fields to fit them into NEMIS's own definitions and requirements. Despite NEMIS' provision of guidelines and training workshops to the provinces on these issues, ultimately the data received is "different".

From 2004 NEMIS is also changing the software it uses to construct the federal database. Though issues of technology are not the domain of this study, it is important to note that the provinces have neither the financial resources, nor the human capacity to undertake data migration.

2.8.1 Approximate Duration

Streamlining and entering data at the federal level takes approximately a month after all data has been received.

2.8.2 Key Players

Institutions	Individuals
NEMIS	Director/Joint Director, NEMIS
	System Analyst, NEMIS
	Programmers, NEMIS
	Data Input Operator, NEMIS

2.9   Step 9: NEMIS Report Generation

With the data uniformity achieved NEMIS prepares for the printing of the "Pakistan School Education Statistics". Due to the fact that there is no analysis of data at any stage of the data cycle, the generation and publication of the NEMIS report entails only the formatting of data to make it print-ready.

2.9.1 Approximate Duration

Like report generation at the provincial level (particularly in Sindh), NEMIS' relatively more advanced technological capacity, and the clarity of report requirements (viz. data requested by the federal government, donor agencies and development programs) facilitates a quick turnaround, from the actual database to the publication of reports.

2.9.2 Key Players

Institutions	Individuals
NEMIS	Director/Joint Director, NEMIS
	System Analyst, NEMIS

3. Identifying Policy Issues

3.1 Issues in the EMIS Cycle

3.1.1 Questionnaire Preparation

- ?? NEMIS input to provinces for questionnaire preparation is not binding[1]
- ?? Each province develops its own questionnaire—raising inconsistencies in methodology, definitions, data collected, and ultimately data uniformity at the federal level
- ?? NEMIS' technical committee is a conglomeration of government employees with representation from the provinces—limiting its legitimacy as an authority capable of issuing directives (regardless of its legal locus standi)

3.1.2 Preparation for Survey

- ?? Capacity building exercises are held for all levels of district employees without any work differentiation. The presence of the EDO (Education) in particular is meaningless, in the context of the EDO's negligible role in the data use flow/process
- ?? Scheduling exercises are merely cosmetic, primarily because the schedule-makers (province) have no formal authority to enforce or ensure compliance with the schedule by the data collectors (district).
- ?? The informality of passing on forms from the EDO/DO (EMIS)'s office to the data collectors reflects the absence of in-built mechanisms to check arbitrary and random data being entered into the forms. There is no mechanism to track each form, as it meanders from the provincial capital to the District office, to the Tehsil, the Union Council and finally to the data collector.

3.1.3 Data Collection

- ?? Data collectors can (and do) outrank the district officials to whom they report, and submit data to. This undermines the critical chain of command (authority) that is assumed in the flow of data at the district level.
- ?? Data collectors are often reporting statistics for their OWN schools, or institutions, raising important questions regarding the in-built incentivization of misreporting. Data collectors and those to whom the data is being reported (eg. LOC to the ADO) are also reporting data on their own performance.
- ?? Since EMIS began in Pakistan with donor funding, data collectors were paid an allowance for data collection activities. The suspension/termination of such incentives is a stated cause for inefficiency and non-productivity of data collectors.

3.1.4 Transfer to Province

- ?? Data is not entered into a district database, as a matter of policy—the ostensible reason is a lack of resources. This means that questionnaire/survey forms, filled out by data collectors, are physically transferred from the districts, to the provincial EMIS unit. There is no tracking mechanism for forms, and therefore no system to check data leakage, as well as data manipulation during the transfer.
- ?? The movement of filled forms from the data collectors to the district Education office is also informal, again introducing potential unauthorized intervention and manipulation of data.

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[1] This is the stated position of NEMIS, and BEMIS although indicated that NEMIS decisions are binding on the provinces. In terms of statutory power, NEMIS has no locus standi, given its status as a project within the AEPAM.

?? The only "consolidation" of data at the district level is the accumulation of filled forms, with no data verification at any stage at the district level. This further undermines the veracity and integrity of the data collection process.

3.1.5 Data Consolidation (Province)

?? Data at the provincial office is manually entered into the database. With the presence of no less than 5 possible data entry personnel at each district (in the case of Sindh), this represents an enormous burden on the provincial EMIS unit. It also is the cause of delays and timelags at the province.

?? The entry of data at the provinces is into fundamentally dissimilar databases. Fundamentally because each entry represents a field that is potentially defined differently by each province and by NEMIS, or not defined at all. This leads to a data integration and uniformity issue down the cycle at the NEMIS level, and also renders—by the strictest statistical standards—much of the data incompatible with each other.

3.1.6 Report Generation (Province)

?? This report repeatedly refers to provincial and federal documents that summarize and relate educational statistics as being "generated". This term has been used with the intent of communicating the fact that there is no data analysis at any node within the data cycle. This failure to "produce" reports that are analytical and probing—and thereby meaningful begins at the provincial level—which unlike the districts have long had both the institutional and financial resources to establish ways and means to analyze educational data.

?? Reports are poorly formatted, poorly designed, and poorly conceived. They are bulky and resemble unending pages of spreadsheet printouts—because that is what they are.

3.1.7 Transfer to NEMIS

?? The provincial data sets received by NEMIS are unique to each province, causing data uniformity issues.

?? The delivery of data to NEMIS is not timed, but rather contingent on the province's ability to deliver the data. This means that throughout the year, NEMIS receives data from provinces at different dates.

3.1.8 Data Consolidation (NEMIS)

?? Data received by NEMIS then needs to be harmonized to match and meet NEMIS' specific needs and criterion. Not only does this compromises the statistical integrity of the entire process, it adds a significant burden to NEMIS'—consuming time and effort that may otherwise have been used to improve the quality of NEMIS output.

3.1.9 Report Generation (NEMIS)

?? Like at the provincial level, NEMIS lacks both the institutional commitment as well as the resources to conduct statistical analysis on the data it receives and consolidates from the provinces.

3.2 Key Human Resource Issues

EMIS organizations in Pakistan—AEPAM (NEMIS), the provincial EMIS units, or the district EMIS cells—have the following kinds of employees (as defined by skills-set and function):

?? Regular public sector employees, or **Civil Servants**, with general management skills and training and experience in various government positions, including education.

?? **Direct Recruits** with Technical Expertise, with specific training and skills-sets in the computer sciences—and broad experience with databases, and software development. Such hires are recruited "directly" and do not join the organizations as a matter of routine (in principle). Most direct recruits for the Sindh, Balochistan and federal EMIS programs were hired in the early and mid-1990s. Once hired they become regular government employees, with government (BPS) pay scales.

?? **Consultants & Contractual Employees**, again with specific training in a discipline related to EMIS, which tends to be mostly either related to computer sciences, training and capacity building. Such employees join EMIS organizations for a short and definite period of time, parting ways upon the termination of expiry of the contract.

They can be categorized in terms of functions as illustrated below:

Table 3.1: Categorization of EMIS Employees by Function

Function	Positions held at EMIS Organizations	Roles & Responsibilities
Management	?? Director (Additional, Deputy etc.) ?? EDO ?? DO (EMIS) ?? ADO	Administration, coordination, budgeting and planning, human resource management and interface with the next tier of government as well as policymakers at their own tier.
Technical:	?? System Analysts ?? Hardware Engineers ?? Programmers ?? Computer Operators	Dealing with the technological aspect of EMIS, running the database, specifying software and hardware requirements, administering networks etc.
Clerical & Support	?? Data Input Operators ?? Drivers ?? Steno typists ?? Chowkidars	Support for both management and technical staff

This categorization of EMIS staff at the federal, provincial and district levels encompasses the spectrum of skills, functions and responsibilities that assigned and dispensed at EMIS organizations. Its pertinent to note that the most fundamental skill, function, and responsibility has been deliberately neglected in the above categorization—that of the data collector. This is because the data collectors are NOT part of EMIS organizations, they do not report to EMIS cells, units or AEPAM, and they are not answerable to the hierarchy of the EMIS organizations.

Several key issues emerge from an analysis of the human resources paradigm within EMIS.

3.2.1 Capacity

Throughout the expanse of the different skills and expertise available to EMIS in Pakistan, there is a complete absence of statistical, economic and social analysis skills. This lack of capacity is hand-in-glove with the concurrent lack of vision that EMIS structures suffer from. Rhetorical allusions to the importance of data are common at all levels of EMIS—from a Tehsil Nazim in District Turbat, to clerical staff in District Sukkur, to the managers at SEMIS and the Systems Analyst at NEMIS. The rhetoric however fails in the face of inquiry on the ways and means in which education policy is informed by the data the EMIS' across the country are generating. A

much more obvious indication of this lack of capacity is in the EMIS reports themselves. As mentioned in section 2, there is a complete lack of even marginal attempts to analyze the data contained in reports, and most reports are made up of printouts of spreadsheets.

In principle, this vision should be defined at the federal level, and trickle down through the provinces, down to the districts. Unfortunately, the various NEMIS committees (see below) that exist in order to provide this vision—and accompanying guidelines and advisory services are unable to perform their duties effectively. Part of the reason for this is that NEMIS does not have any legitimate source of authority in terms of enforcing a vision. However, the definition of a vision is lacking even at the NEMIS level. This may be explained by the composition of NEMIS committees—exclusively composed of government employees from the various provincial education departments, and among them almost exclusively lead by AEPAM and NEMIS leadership. This kind of in-breeding in government committees is endemic in Pakistan, despite the fact that recent reform efforts in education (endorsed by the current administration)[2] have emphatically stated the dangers inherent in oversight and policymaking being assigned to the implementers and executors of policy.

Figure 3.1: NEMIS Policy Committee (According NEMIS III PC-1)

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Members of the Policy Committee:

1.  Federal Education Secretary (Chair)
2.  Director General AEPAM (Secretary)
3.  Joint Educational Advisor P&D Wing, Ministry of Education
4.  Chief, Education Section, P&D Division
5.  Secretary Education Balochistan      |
6.  Secretary Education Sindh            | or    Additional Secretary (Development)
7.  Secretary Education Punjab           |                of the respective provinces
8.  Secretary Education NWFP             |
9.  Secretary Education AJK              |
10. Director Education FANA
11. Director Education FATA
12. Director General, FDE, ICT
13. Project Director NEMIS
14. Director General of Federal Bureau of Statistics (FBS)
15. Director of NIPS
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[2] The centrepiece of the current government's higher education reform strategy spearheaded in part by the Hon. Minister for Education was the separation of governance and management functions at universities.

Figure 3.2: NEMIS Coordinating Committee (According NEMISIII PC-1)

Members of the Coordinating Committee:

1.	Director General (AEPAM)	Chairperson
2.	Joint Educational Adviser (Planning Wing)	Member
3.	Director (EMIS), AEPAM	Member/Secretary
4.	Chief, Education Section, P&D Division	Mebmer
5.	Provincial MIS Coordinator, Punjab	Member
6.	Provincial EMIS Coordinator, Sindh	Member
7.	Provincial EMIS Coordinator, NWFP	Member
8.	Provincial EMIS Coordinator, Balochistan	Member
9.	Director General, FDE, ICT	Member
10.	Provincial EMIS Coordinator, FATA	Member
11.	Provincial EMIS Coordinator, FANA	Member
12.	Provincial EMIS Coordinator, AJK	Member
13.	Joint Director/Chief Statistician, AEPAM	Member
14.	Senior System Analyst, NEMIS	Member

Figure 3.3: NEMIS Technical Committee (According NEMISIII PC-1)

Members of the Technical Committee:

1. Project Director NEMIS (Chair)
2. Joint Educational Advisor, PSTE Wing, Ministry of Education
3. Chief, Education Section, P&D Division
4. Joint Director/ Chief Statistician (Secretary)
5. Systems Analyst, AEPAM
6. EMIS Coordinator, Punjab
7. Systems Analyst, Punjab
8. EMIS Coordinator, Sindh
9. Systems Analyst, Sindh
10. EMIS Coordinator, NWFP
11. Systems Analyst, NWFP
12. EMIS Coordinator, Balochistan
13. Systems Analyst, Balochistan
14. EMIS Coordinator, FANA
15. Systems Analyst, FANA
16. EMIS Coordinator FATA
17. Systems Analyst, FATA
18. EMIS Coordinator AJK
19. Systems Analyst, AJK
20. EMIS Coordinator, FDE, ICT
21. Senior Systems Analyst, NEMIS
22. Senior Programmer, NEMIS

3.2.2   Provincial Control—District Function

Another major human resource issue in the context of EMIS—and ostensibly every other major social service delivery area within government domain since the Devolution Plan—is the disjoint between the hiring, firing and "management", of district government employees, by the province, rather than the district. The arguments for total district control of its human resource function is a simple one, that true devolution is incomplete until the people's representatives have the authority, and financial wherewithal to govern who works in the district, and what are the parameters within which they work. Interestingly, while this argument finds great credence at the

district level, it is not one that is very popular in the provinces. In fact, as far as EMIS provincial units are concerned, one of the main explanations for the plummeting standards of data reporting (it remains to be established if data quality or its reporting had ever been of a high-quality) is that after devolution, the province did not have the power to tell district officials what to do—that job has now fallen to the District Nazim. In addition, SEMIS very made the very emphatic case that it be allocated both the funding and the legitimacy to operate across the province, in all districts, as an autonomous body, so that the most important stage in the EMIS process—data collection—would not rest indirectly in the hands of the district governments.

One of the underpinnings of the debate on the district v. province debate of course is simply the argument narrated above—human capacity. Districts, even if they had the money and autonomy—simply do not have the human capacity, nor the organizational structures—that are conducive to the pursuit of unbiased, unblemished data on the state of education.

3.2.3   Management versus Oversight

As in the case of NEMIS and its several committees, the government's internal, regular structures with regards to EMIS are wrought with a fundamental contradiction that needs examination in the broader context of Education Sector Reform.

If monitoring and evaluation are seen to be among the primary goals of a dynamic, robust and verifiable database of education statistics in the country, it is critical that the data reflect reality. In the current scheme of affairs, the modus operandi of EMIS cells at the district levels, EMIS units at the provincial level and NEMIS at the federal level is geared to ensure an inherent disincentive for an introspective approach to data collection, analysis, dissemination and usage. Simply put, the very people whose performance EMIS data is supposed to be reporting on are the people who are in some way responsible for collecting data and/or generating reports. This holds particularly true for data at the district level, and can be illustrated as below:

Table 3.2: Matrix of EMIS Role & Incentive for Particular Data Outcomes

District Official	Responsible for EMIS?	Responsible for Performance?	Checks & Balances?	Conflict of Interest?
EDO (Education)	No	Yes	No	Yes
DO (EMIS)	Yes	No	No	No
ADO	Yes	Yes	No	Yes
Data Collector.	Yes	Yes	No	Yes

3.2.4   Sanctioned Strength versus Actual Strength

The figures in the pages that follow represent the organizational structures available to EMIS at the district and provincial levels. While organizational structure issues are dealt with separately below, a key human resources consideration that's central to the EMIS framework in Pakistan is the difference between the sanctioned strength allotted to various EMIS organizations, and the actual staffing at those organizations.

In Balochistan for example, the BEMIS office at the Directorate of Schools has 14 sanctioned positions. Of these, 7 are officer-level positions (professional), while the other 7 are semi and non-professional positions.

Figure 3.4: District EMIS Organizational Chart (based on District Khairpur M

◻ = Data collectors for EMIS
■ = District EMIS staff

BPS-20	EDO (Education) BPS-19 to 20

BPS-19	DO (Post Secondary) BPS-18 to 19	DO (Adult Education) BPS-18 to 19	DO (SEMIS) BPS-18 to 19	DO (Colleges) BPS-18 to 19	DO (Secondary) BPS-18 to 19	DO (Elementa BPS-18 to
				Principal BPS-19 to 20		

BPS-18 — Head Teacher BPS-17 to 19 — ADO BPS-18

BPS-17 — Computer Programmer BPS-17

BPS-16 — Superintendent BPS-16

BPS-12 to BPS-9 — Computer Operator BPS-12 — Steno typist BPS-12 — Supervisor BPS-9 to 11 — RP BPS-9 to

Assistant BPS-11

Non-Professional Staff

Data Input Operator BPS-6

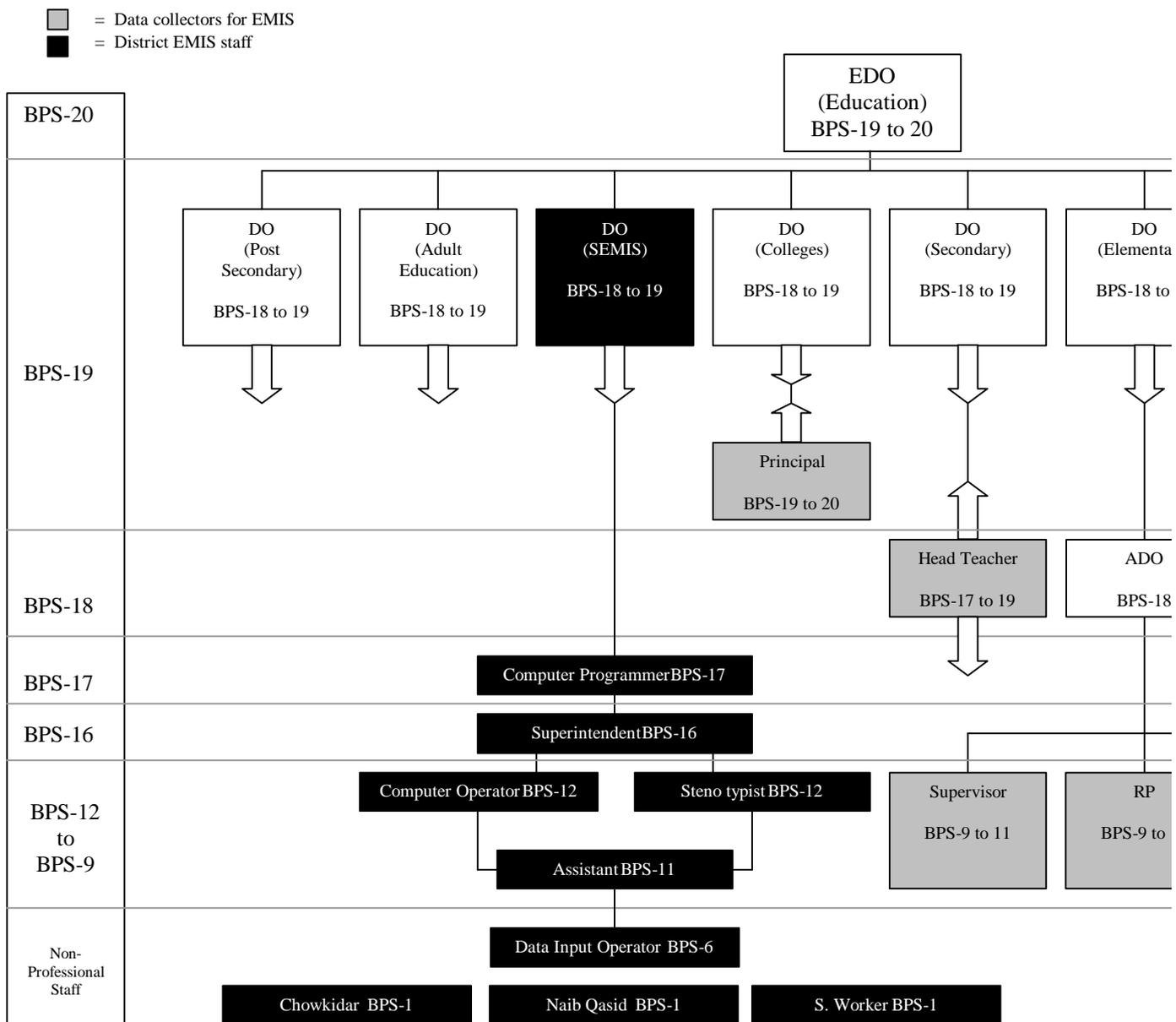Chowkidar BPS-1 — Naib Qasid BPS-1 — S. Worker BPS-1

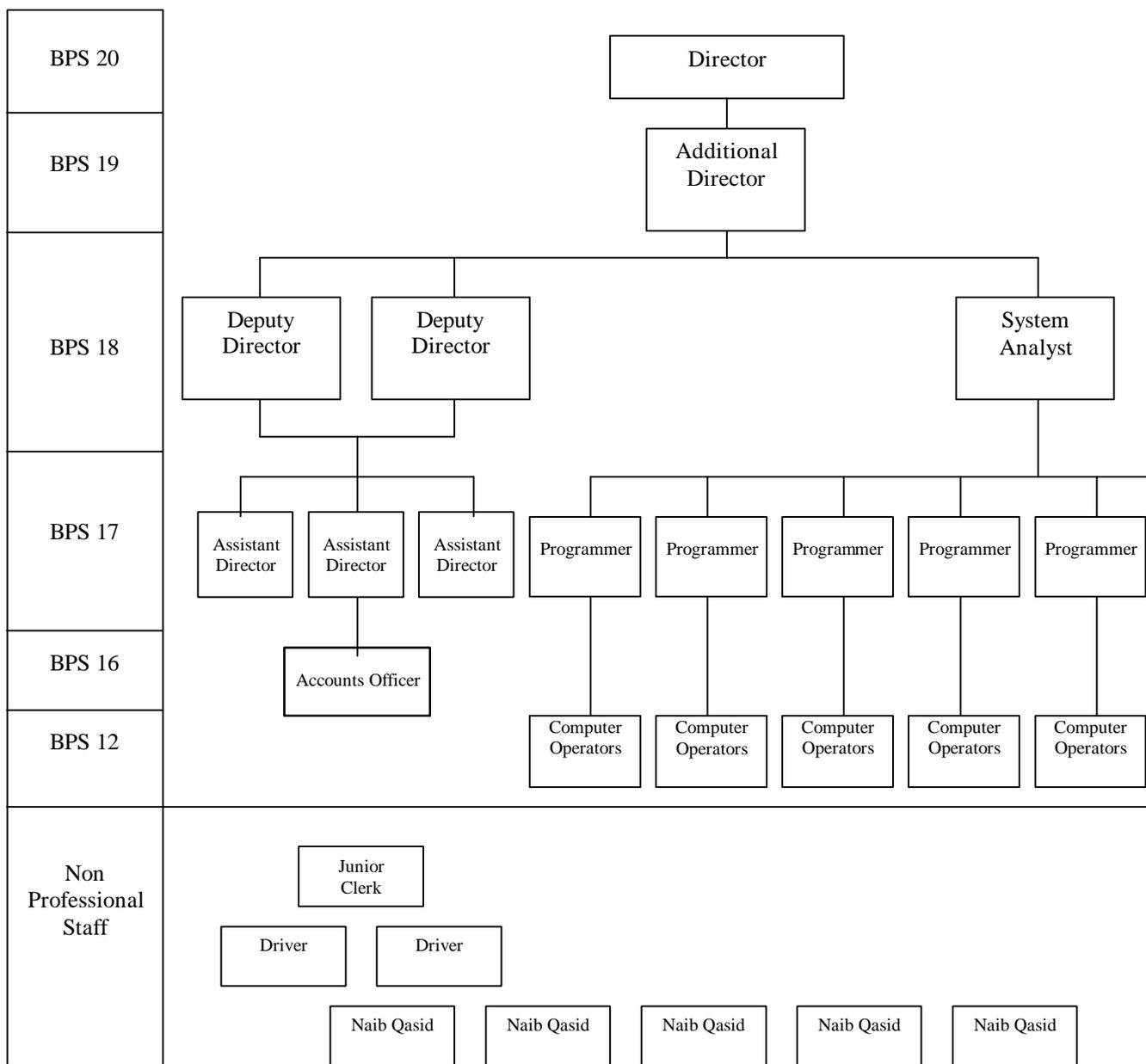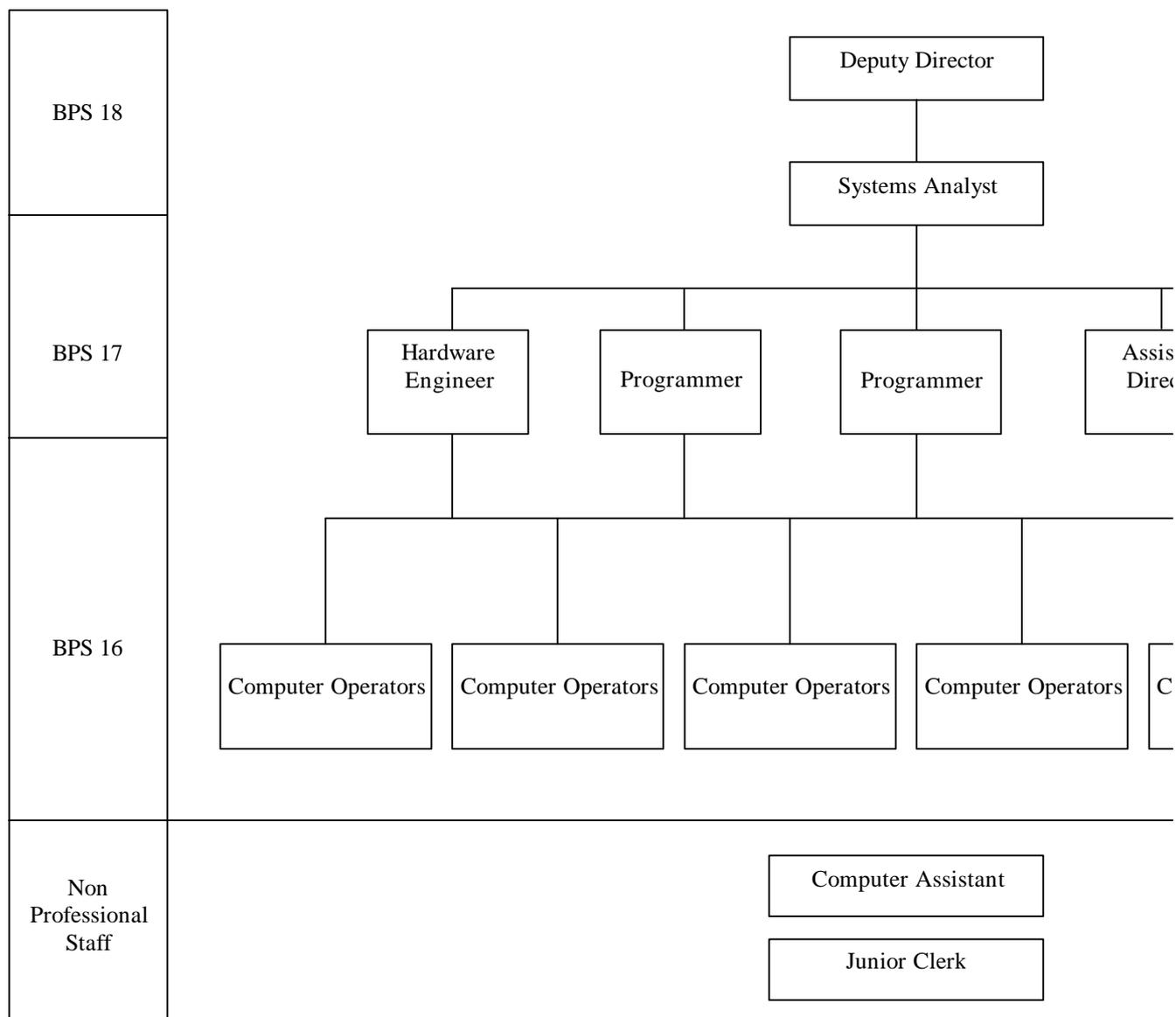**Figure 3.5: Sindh Education Management Information System (SEMIS) Organization**

Figure 3.6: Balochistan Education Management Information System (SEMIS) Organizat

The actual strength of the BEMIS office's professional staff however is 3, with the positions of Systems Analyst, two Programmers and a Hardware Engineer lying vacant. Effectively these four positions represent the entire professional/technical staff at BEMIS. In the absence of such human resources, the BEMIS team is left with no option but to delegate and share responsibility—which while it represents a noble effort, is reflected in BEMIS' poor health—both in terms of the processes it follows and the output it produces. .

SEMIS' relatively healthier position is reflected in the fact that of a total of 33 sanctioned positions (18 of whom are professional staff), there are a total of 5 vacant positions (four professional and one semi-professional). Sindh's districts however, at least according to SEMIS, are severely depleted of human resources. With ten sanctioned positions at each district, Sindh has a total of 160 sanctioned District EMIS cell positions. Of these, SEMIS reports that only 20 are actually filled, the rest lying vacant. Preliminary investigation of these numbers revealed however that SEMIS information for at least two of the districts (Sukkur and Khairpur was faulty, and that whereas SEMIS reported a total of two actual positions, there were nine that were filled. Even so, research thus far indicates that of 160 positions, only 29 are filled. It is difficult to expect success, or hold managers accountable when the government creates out-clauses (such as unfilled, vacant positions) for underperformance.

3.3 Key Institutional Issues

The EMIS regime in Pakistan is made up of institutional or pseudo-institutional structures at the district, provincial and federal levels. These have been described in detail above. It is however important to consider these structures and their relationships to each other as well as to the rest of the government (particularly the District Education Office/Education Departments/Ministry of Education).

3.3.1 EMIS in the Education Hierarchy

As the entities responsible for providing data to policymakers, EMIS structures at every level of government fall under the direct control of the education section of the given geographical domain they are in. The figures below illustrate the relationship of the federal government and NEMIS, the Sindh Government and SEMIS and the Balochistan Government and BEMIS. Each of these EMIS structures has a unique and distinctive place in the education hierarchy.

NEMIS, although operational since 1992-93 continues to operate as a project of the Academy for Educational Planning and Management (AEPAM). AEPAM itself is an autonomous body responsible directly to the Secretary of Education, although the Joint Education Adviser (P&D) maintains liaison with AEPAM for the Secretary. Currently, the Director General's position at AEPAM is vacant, leaving the head of NEMIS position also vacant—as the previous DG AEPAM was also the Director of NEMIS.

There is no direct, formal link between NEMIS and the Ministry's policy and planning team, an anomaly if we consider NEMIS to be a supplier of data, and the Ministry's P&D wing to be a user of data. The Deputy Education Adviser of ESR in the P&D wing—in theory a prime user of EMIS data—in fact expressed cynicism not only about the context of data use in policymaking in Pakistan, but also significant reservations about the validity of the data. For policymakers, EMIS data is primarily a vehicle for fulfilling the data reporting requirements of development programs such as EFA and the PRSP.

Figure 3.7: Distance from the Top: NEMIS in the Federal Ministry of Education

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┌─────────────────────────────┐
│   Secretary Education        │
│   BPS-21                     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│  Joint Education Adviser (P&D)│
│   BPS-20                     │
└─────────────────────────────┘
              ▲
┌─────────────────────────────┐
│  Director General—AEPAM      │
│   BPS-20                     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│      AEPAM (NEMIS)           │
└─────────────────────────────┘
```
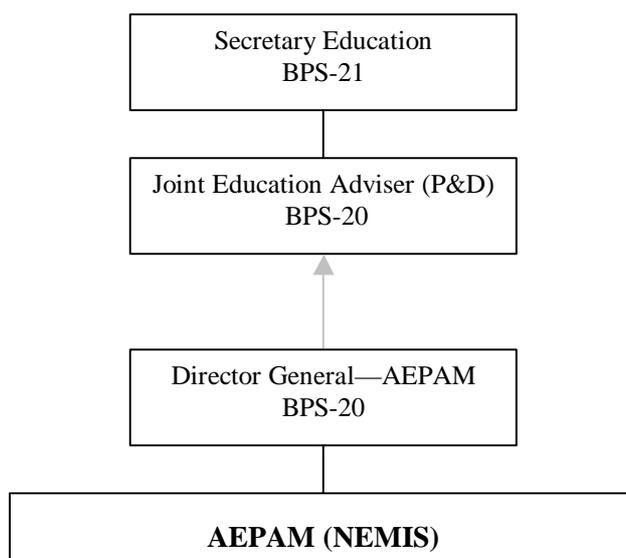
The lack of confidence in NEMIS at the federal level is not surprising. If we examine the Ministry of Education itself, and its tendencies viz. informing policymaking and planning through education data, it becomes clear that regardless of the host of problems NEMIS faces, neither do the primary USERS of its data, use its data, nor do they incorporate measures in policy to solve its problems. There is not a single analyst or statistician at the Ministry that is tasked with an analysis of data, nor are there, or have been overtures from the leadership of the Ministry to take such measures.

As serious as the issues that exist at the federal levels may be, the challenges NEMIS faces in an organizational context are relatively simple to identify. In the provinces, there exists the much larger challenge of treating each province differently (at least Sindh & Balochistan)— because the contexts are so disparate, and in Sindh's case, the structure, totally unlike the other provinces.

Figure 3.8: Distance from the Top: SEMIS in Sindh's Education Department

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                      ┌─────────────────────────────┐
                      │   Secretary Education        │
                      │   BPS-20                     │
                      └─────────────────────────────┘
         ┌──────────────────────────┐      │
┌──────────────────┐         ┌──────────────────────────┐
│ Director SEMIS   │ ──────▶ │  Additional Secretary     │
│ BPS-20           │         │  BPS-19, BPS-20           │
└──────────────────┘         └──────────────────────────┘
         │
┌──────────────────┐
│     SEMIS        │
└──────────────────┘
```
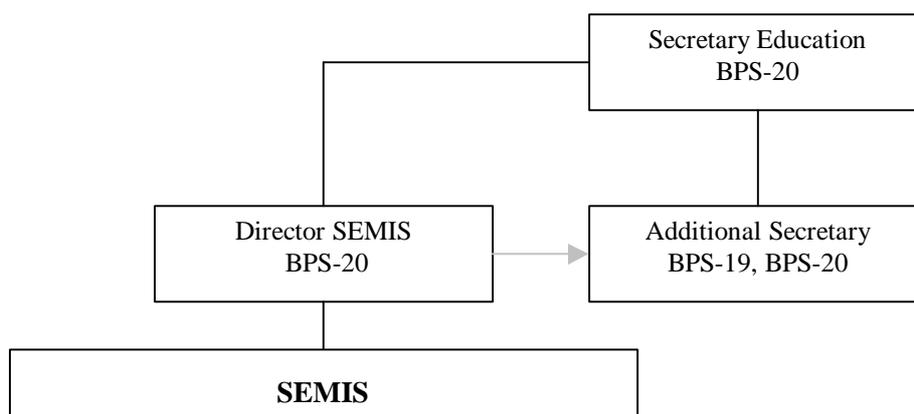
Figure 3.9: Distance from the Top: BEMIS in Balochistan's Education Department

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┌─────────────────────────┐
│   Secretary Education    │
│         BPS-20           │
└─────────────────────────┘
             │
┌─────────────────────────┐
│    Director (Schools)    │
│         BPS-20           │
└─────────────────────────┘
             │
┌─────────────────────────┐
│   Additional Director    │
│     (Schools) BPS-19     │
└─────────────────────────┘
             │
┌─────────────────────────┐
│  Deputy Director (BEMIS) │
│         BPS-18           │
└─────────────────────────┘
             │
┌──────────────────────────────────┐
│             BEMIS                 │
└──────────────────────────────────┘
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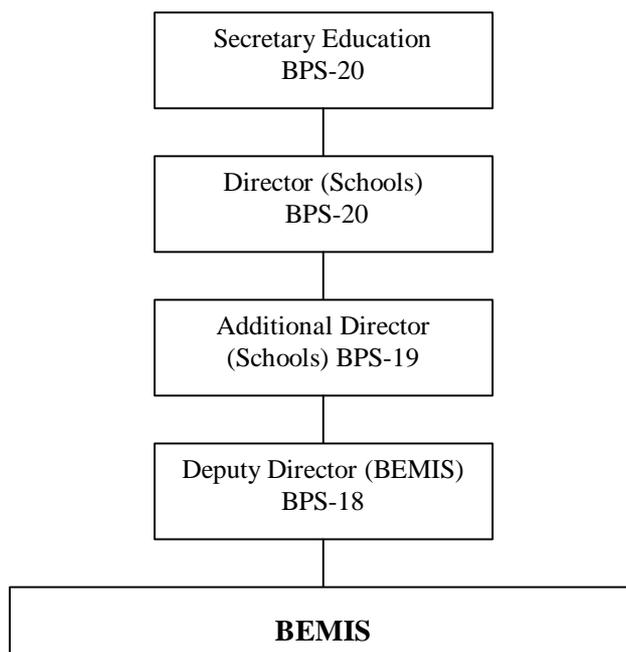
If EMIS' positioning in the pecking order of education hierarchy is any indication, one of the key causes for the failure of the government to produce rational education policy that addresses the NEEDS of the most needy clients of the government of Pakistan becomes clear.

3.3.2   EMIS and its Role in Policy & Planning

The Ministry of Education and its complementary agencies at the provincial and district levels play active roles in the business of government—providing vital information and policy advice on matters of economic, social and human development to finance and planning departments at every tier of government—from inputs to the PRSP to asserting the importance of investing human capacity. At the district level, the EDO (Education) plays a key role in helping decide spending priorities—in terms of a district's investment in education.

There is however no institutionalized or formal mechanism that ensures that such input—whether at the district, or province, or center—is a reflection of reality, or based on the data that exists to support or undermine the positions that government takes at every tier in Pakistan. At the district levels in fact, the attitude of the policymakers is downright detrimental to the development of a viable EMIS mechanism for data collection and usage. Computers purchased and allocated to EMIS cells frequently are usurped by the EDO (Education) and/or other EDO's for use in their offices. In Sukkur for example, the EDO (Education) has four computers in her office. One of which is not functional. When EMIS staff was asked about how many computers they had, they responded none. When asked what they do when data needs to be input, EMIS staff responded incredulously, that they come to the EDO's office to enter data.

These kinds of situations represent a failure at the leadership level of the federal ministry of education—failing to utilize the data collection regime that donors and the government have helped finance and construct over the course of several years. It also however signals a failure on the part of the AEPAM, and the various provincial EMIS units, in terms of their ability to develop a fail-safe, trustworthy and bankable system that generates data that is taken seriously by

policymakers. EMIS organizations and structures in Pakistan do not have the requisite institutional and organizational vision, or capacity to fulfill the enormous promise of a data regime that is effective and efficient.

3.3.3 Funding and Resource Constraints

One of the principle causes for the failure of EMIS on different fronts is a refrain that although trite and dated is true. EMIS has never been allocated the kind of funding priority that would enable the development of a sustainable flow of education data. NEMIS-III's PC-1 for example, approved in July 2003. It called for the hiring of 17 professional staff members in order to fulfill the terms of reference of NEMIS-III. At the time of hiring, the Secretary Education raised the issue of the rules under which these staff members would be hired. The NEMIS director failed to provide NEMIS hiring rules to the Secretary following which the matter has been sent to the Establishment Division of the Government of Pakistan. This effectively means that even in the face of funding allocation, NEMIS does not have the resources, either in terms of its own managerial and administrative staff, or in terms of support and facilitation from the leadership of the Ministry of Education for the effective dispensation of its role. In the provinces, the situation in terms of funding and resources is much more dire. In Balochistan for example, ever since donor funding ended in 1999, BEMIS has operated on a shoestring budget as provided by the UNICEF and other donors. IN 2000, BEMIS staff had to develop a questionnaire on the computer take a single printout and photocopy questionnaire/survey forms to send to the districts. Prior to 1999, BEMIS staff claimed that data verification was an important constituent of the work of BEMIS, since then however, with dwindling funds, BEMIS does not conduct a data verification exercise, and this year, it will conduct data verification in only four of its districts—with funding provided by UNICEF.

3.4 Key Data Issues

The object of EMIS activities in Pakistan is the generation of data to assist in monitoring and evaluation of existing education policies, and practices, and in facilitating policymaking and planning exercices for the future.

3.4.1 Data Users

In practice, this study found that EMIS data is not used for policymaking at any node, in any tier of government. EMIS data is used to inform documents such as the PRSP, but this represents a donor-driven demand for data, and is not a direct input into education policy. At the district, province and federal levels, policymakers simply do not have the confidence to use EMIS data as a valid and verifiable data set. That is however only part of the explanation for why data is not used in policymaking. Other factors play an equally important role.

3.4.2 Quality of Data

First and foremost, the assumption that policymakers KNOW HOW to use data to make policy is questionable. Second, politically, it is likely that there is a disincentive to use data—especially in areas known to be governed on the basis of patronage and nepotism—rather than solid policy benchmarks. Third, EMIS data, as mentioned above is presented as is, rather than undergoing any analysis. Finally, the data's integrity notwithstanding, there is simply not enough data to be used. NEMIS data, the most comprehensive of the EMIS datasets, is disaggregated along the following lines:

- ?? By level—primary, middle, secondary, higher secondary
- ?? By gender—male or female
- ?? By location—rural or urban (as well as by province)

In addition, EMIS data contains information on physical facilities of schools, including the following:

- ?? Is there a building or not?
- ?? Who owns the building?
- ?? Is the Building constructed?
- ?? Does the School have Electricity?
- ?? Is there Drinking Water for students?
- ?? Is there a Latrine for students?
- ?? Is the school separated by a Boundary wall?

EMIS data lacks both the quality—in terms of sophistication, breadth and depth, and the quantity, in terms of variables and parameters—to be useful in deconstructing education policy and informing decision-making, at any of the three tiers of government in Pakistan.

3.4.3 Data Analysis

One of the simplest and most basic instruments of policy analysis is cost-benefit analysis, or an analysis of return on investment. EMIS data does not contain any financial information. This is not surprising, given the fact that even at the level of senior policymakers financial information—in terms of allocations to education at the federal, provincial and district levels—has to be sought out individually by contacting the Ministry of Finance. The greatest impact of the unavailability of financial data on education is that it makes the process of resource allocation opaque, and allows for the perpetuation of claims of success (and failure) ad nauseaum, and ad infitium, without ever being subject to the rigors of numerical verification. This lack of transparency and accountability is not only relevant in terms of its applicability to government activities, but indeed also to donor interventions in education. Year after, donors have invested billions of rupees in infrastructure, human capacity, enrollment drives and development schemes in education. The impact of these investments is usually judged according to variations in the literacy rare. The literacy rate itself however is ill-defined, and has negligible relevance in the face of increasing poverty, and unemployment.

3.4.4 Vague Data, Opaque Systems and Processes

Ideally EMIS data would also serve as a polling mechanism to determine the education and training needs of communities that are hit hardest by poverty. Some important and well-known trends that have emerged from the EMIS data that does exist for example, need further examination and policy attention. The increasing percentage of students enrolled in private educational institutions at all levels, the learning achievement of students at private, public and non-for-profit schools, and the demand-side failures in education—driven by perceptions of education as the panacea to low income levels are all examples of issues in education that can be tested and examined in a dynamic and robust EMIS data environment.

Instead, policymaking exercises use questionable research techniques and spurious data correlations on these issues and others to construct policy positions, and subsequently allocate public resources. At a bare minimum, improved metrics in the EMIS system and a greater focus on data analysis would allow for civil society and donor agencies to exert public and private pressure on government to target proven and known issues in education, and create an environment of increased accountability, of public servants and elected official levels, and create increased transparency in both the policy making and implementation/execution processes.

4.   Draft Policy Recommendations

This section is divided into three parts, in keeping with the three tiers of government at which EMIS operates. Each part contains a definition of the problems and possible ways to address those problems.

The most obvious and common proposed solution to all public policy challenges in Pakistan is the allocation of recurring expenditure to a given activity. While making EMIS an autonomously managed government exercice, and allocating greater financial and human resources to it are both almost fundamental to the future viability of education data and its veracity and use in Pakistan, these measures do not address the core of the issues that EMIS faces. The recommendations below al require some financial allocation, they do not however assume an environment that is vastly different from the current financial realities in the districts, provinces or at the federal level. This represents a point of departure from traditional policy recommendations in Pakistan, and needs to be seen in the context of a resource-poor economy which has had limited success in translating investments in education (or other social service delivery arenas) into tangible success.

4.1   EMIS at the District Level

At the district level, EMIS suffers from a lack of funding, a shortage of human capacity, the absence of a vision for EMIS, and organizational structure issues.

4.1.1   Problem: Informal Processes and Mechanisms

The job descriptions and definitions, as well as the relationship between the various offices that comprise the district education office, and the linkages between this office and others are all governed by informal arrangements that vary across districts and create bureaucratic hurdles, delays and timelags in data collection and reporting, and raise questions about data integrity (even where data is randomly verified).

4.1.1.1   Draft Rules of Business, Procedure, JD's & Links

District education offices require rules of business and procedures that go beyond the method of filing, and other menial administrative chores. The drafting of effective rules of business that incorporate the Whole District Initiative (WDI) objectives, as well as the broad context of Education Sector Reform (ESR) is a critical step that will help clarify roles and responsibilities. Making these relationships and rules of business a matter of public record, will further erode the obfuscation of duties and opacity of processes that characterize district offices.

4.1.2   Problem: Policymaking and Planning

The critical juncture at which policymaking can be informed by data in the district is at the time of the drafting of the Annual Development Plans for education by the EDO (Education), and its submission to the EDO (Finance & Planning). Data is almost never actually used, with policy instead being dictated either by the whims of district public servants, or district/federal elected representatives.

4.1.2.1   Capacity Building

District officials who are active participants in the policymaking and planning process (which will be better defined after the drafting of procedures, rules of business and relationship between district officials—as above) need to know HOW to use data, WHY data is important, and WHAT it adds to the governance of districts. Intensive training workshops that both impart and test the skills of district officials in this regard will help create the intellectual infrastructure at the district level for the application of data to policymaking.

4.1.2.2 Systems Approach

It is however difficult not to be cynical of the training and capacity building paradigm—especially given the fact that NEMIS conducts such activities on an annual basis. Data needs to serve as a decision-support system. Notwithstanding the timely availability of data, the process and system that defines policymaking at the district level needs to have mandatory clauses—involving multiple tiers of verification, and public disclosure—that require district officials to correlate policymaking with the data that exists for the district. A role for the province in the verification process (outside the domain of the EMIS structures) is conceivable.

4.1.3 Problem: Data Collectors Outside the EMIS Net

Since data collectors are teachers, they are not accountable to the DO (EMIS), nor to the provincial EMIS units. This is an inherent disincentive to provide timely and accurate data.

4.1.3.1 Fill Vacant Positions/Redefine Roles

Data collectors need to be within the District EMIS cell. Sanctioned posts that are lying vacant need to be filled, and re-defined to include a critical mass of data collecting agents that are based at the district education office, are answerable to the DO (EMIS) and have no visible stake in the production of data that indicates anything specific to any direction. Alternatively, in defining the rules of business, EMIS activities can be made a central part of teacher and ADO responsibility. This however is unlikely to generate change in the status quo, given that such an informal arrangement already exists, and has yet to yield tangible results.

4.1.4 Problem: Capacity and Vision for EMIS

Districts lack the capacity to develop a dynamic vision and purpose for data collection. Districts also lack the ability to attract the kind of talent that is necessary for such vision. (Statistical and economic analysis, and the relationship of data to policymaking).

4.1.4.1 Invest in DO (EMIS)

The DO (EMIS) position at the district is one that is currently administrative and managerial. Given that EMIS activities in the district, although dragged out, hardly engages the officer year-round, the DO (EMIS) needs to be the focal point fro investment in human capacity in terms of adding vibrancy to the actual data. Significant investments in these positions will yield a strong and vocal response to whimsical or politically motivated policymaking.

4.1.5 Problem: Paucity of Data

There is simply not enough data being collected by the districts. Much of the data that can add value to EMIS is already (or should be) on record. School performance indicators such as learning achievements, exam results, student retention and drop out rates, educational and family history of students are all student records that already exist.

4.1.5.1 The 24/7/365 Data Regime

Data collection needs to be a round the clock, 24/7/365 days-a-year activity. Databases at the districts need to be resources that are available both to the public, and to public officials on a turnkey basis. This does not necessitate the installation of expensive computer equipment, nor the investment in skills needed to use such equipment (although it would be ideal). Instead, it requires an institutional commitment from the top down, for the EMIS cell to be sensitive and alert to changes in the district—to wax poetically, each rustling of a leaf must initiate a series of automatic responses from the DO (EMIS) and her/his team that incorporate the noise into the existing database.

4.2   EMIS at the Province

EMIS units in each province have different questionnaire/survey forms, and the provinces receive data after lengthy delays that can range from a few weeks to over a year. Data entry at the provinces represents a major challenge to the resource constrained EMIS units in the provinces and the role of the province in terms of human resource management and answerability to the federal government are both ill-defined.

4.2.1   Problem: Delays in Data Submission

The submission of data from the districts to the provincial EMIS unit is the single largest factor in the habitual delays in the publication of education data. On average it takes 20 months for the data of any given year to be published by NEMIS, far too long for the data to be relevant—and more importantly raising the question of what data policymakers use for planning and budgeting.

4.2.1.1   Incentivize: Punish Late Data Submission

Submission of data back to the provinces by the districts needs to be incentivized by the government. Since district funding needs to change hands from the province to the district before the district can actually begin spending, in theory this does not represent a major challenge. Of course, punishing late submissions by suspending funding altogether would represent an unreasonable position. More appropriate would be the suspension of education funds. The amounts would be easily available based on the approved Annual Development Plans. Additionally improvements to the district EMIS situation can also be incentivized in this manner.

4.2.2   Problem: Form Tracking and Management

The lifecycle of questionnaire/survey forms begins with the drafting and finalization of forms at the provincial EMIS and ends there with the submission of forms by the districts. However tracking of which form goes where, how many forms are printed, disbursed, and how many are returned is not an incorporated feature of the EMIS process. This is another manifestation of the susceptibility of the system to random interventions that can neither be identified, nor protected against.

4.2.2.1   Document Inventory & Tracking System

The quickest fix to document inventory and tracking problems is the installation of a barcode scanning mechanism. Such a solution may be expensive and difficult to implement. A more realistic solution may lie in the institution of strict guidelines and procedures the handling of forms, and the formalization of the transmission of forms mechanism, from the province, through the district and back—with an accounting of forms at every node.

4.2.3   Problem: Data Entry at the Provincial EMIS

Data entry is a tedious, time consuming and resource-intensive exercise at the province, particularly given that at least in Sindh, both the human resources (in principle) and the physical resources (computers) have been provided to the districts for the electronic documentation of EMIS data. Each district should therefore be entering its own data, and forwarding the district database to the province electronically. Currently no district in Balochistan (save Quetta), and only three of 16 in Sindh enter data electronically.

4.2.3.1   Establish Electronic District Databases

Physical submission of forms to the province represents a breach of the autonomy of the district. While physical forms are a necessary complement to the EMIS process, allowing for actual verification of data entry success rates, and other such metrics, they need to be seen as

complements, not the substance of the EMIS process. A one-time investment to establish databases in the districts is all that is required to replace the paper database with electronic format. Thereafter, EMIS data (as a 24/7/365 activity) at the district will always (or should always) be live.

4.2.4 Problem: Lack of Control over District EMIS

The province sees its lack of control over district processes as a major obstacle to the successful dispensation of EMIS unit duties. This is actually a human resource management issue, with the EMIS process being defined by the lack of authority (downstream), and the lack of accountability (upstream) at almost every stage.

4.2.4.1 Independent Province-based EMIS

Redefining the relationship between the province and the district is not among the options available as a matter of policy. For one, it flies in the face of the ESR's devolution-centric reform agenda. More importantly, it undermines the spirit of autonomous, inclusive grassroots democracy. Nevertheless, a possible solution that the provinces would like very much would be to make the province EMIS units, separate autonomous entities, eliminating the district EMIS cells, and bolstering the "monitoring & evaluation" role of such agencies. While this represents the logical extremity of such an approach, some derivative thereof would certainly solve many of the issues inherent to the problems that EMIS faces.

4.2.4.2 Strengthen District-based EMIS

A long-term solution to this problem, and a riskier one, is to eliminate the provincial EMIS altogether. Again, this represents the logical extremity of the approach, it may instead simply be enough to strengthen the capacities of the district education office, to a point that the provincial EMIS unit becomes a lean operation that requires little in terms of resources to consolidate already accurate, verified, analyzed and electronically formatted data.

Regardless of which approach is taken to this problem, it represents the most abstract, and most pressing of the issues facing EMIS in Pakistan. The loose definitions and relationships between the districts and provinces with regards to EMIS need urgent addressal before any tangible improvement in either the processes or their outcomes will be forthcoming.

4.3 EMIS at the Federal Government

The federal government is the proverbial last line of defense against the formulation and implementation of education policy that fails to address the most pressing needs in education. In theory it determines Pakistan's education needs based on the output of NEMIS. NEMIS lacks both the financial and human resources to produce education data that enjoys the confidence of policymakers, or that can be used as an effective tool for the enhancement of transparency and accountability by civil society and donors. NEMIS reports lack the intellectual wherewithal to serve as useful instruments in the analysis of public sector initiatives and policies in the realm of education. The most pertinent of all the facts related to NEMIS is that it has been in operation for almost a decade, failing to produce even once, a report that fulfills the basic substantive elements of what an education database should constitute.

4.3.1 Project Status: Lack of Authority and Leadership

Since NEMIS is a project within the AEPAM domain, it has limited to no formal authority over any entity in the government. NEMIS' chief can tell his subordinates at NEMIS what to do, but nobody beyond that. A saving grace may have been in the ability of senior policymakers to tell NEMIS what to do, unfortunately, because AEPAM is distinct and autonomous from the Federal Ministry of Education (and other Ministries) that too is not within the formal parameters of the

realm of possibility. This leaves NEMIS with an enormous responsibility to shoulder, without the presence of a formal authority structure through which its decisions and policies could be followed at the provinces and districts. It also leaves NEMIS without any direct link to policymakers who in principle should be the primary, and most urgent users of NEMIS output. In summation, NEMIS lacks authority downstream and it lacks vision and leadership upstream.

4.3.1.1   Integrate NEMIS into Ministry of Education

On way to solve the structural problems of NEMIS would to integrate it into the Ministry of Education, by adding a Joint Education Adviser and below structure to the Ministry and bringing its activities directly under the domain of the Minister and Secretary. This would improve visibility, provide ownership of the EMIS process to the Ministry (thereby improving accountability) and send the strongest of signals about the centrality of education data to the education policy and planning process. It would also improve the environment of perpetual uncertainty with regards to the imminent end of NEMIS activities, and solve NEMIS' tangles (such as the invoking of arcane hiring rules by the Secretary Education that has delayed NEMIS-III's hiring process by seven months, as of February 2004).

4.3.1.2   Resist the Establishment ofanother Autonomous Organization

Popular opinion in the public sector for solving structural problems of distinct processes is the creation of separate organizations to manage such processes. While the creation of a separate organization to handle education data is not inherently flawed, the reasons for pursuing such a direction need to be clearly identified. The results of this study do not suggest that such a direction is the clear, and only solution to NEMIS' problems. NEMIS' output has never been of the kind of quality that merits the creation of a new organization, very little evidence suggests that the quality of its output would dramatically change, given autonomy and increased funding. These two factors only represent the obvious, but secondary steps to improve the quality flow and use of education data in Pakistan.

4.3.2   Lack of Formal Power

Whether it exists as a project, as an independent organization, or as part of the Ministry of Education, NEMIS would still be unable to ensure the enforcement of its decisions by provinces and districts because it does not hold formal power to do so. One of the obvious implications of this is the unique questionnaires/survey that each province produces. While provinces must be encouraged to go above and beyond the needs and requests of the federal government in terms of data collection, they do need to observe minimum benchmarks in terms of definitions, and data fields—to lend credence to NEMIS' data.

4.3.2.1   Devise Ways to Link District & Province EMIS' to NEMIS

Several possibilities exist with regards to linking the federal education data regime with those in the districts and provinces. One obvious means is to create a stream of staggered financial incentives that can be activated only by the federal EMIS. Statutory or regulatory measures can be considered but they tend to require complicated legal maneuvering given the nature of the Pakistani federation, and the tenuous state of the devolution of power that was undertaken in 2000.

4.3.3   Emphasis on Bureaucracy and Technology

NEMIS and related organizations and structures at the provincial and district levels all suffer from the misconception that education management information systems are about the technology—that computers, database software, and programming languages are the represent the central emphasis in EMIS. They also suffer from the natural institutional bias that permeates all government agencies at some level—that government organizations work a certain way, and that

is how EMIS must function. EMIS is not about management, nor about information systems—its about education—and how information systems can help improve in the management of education. However staffing at all EMIS offices, as well as roles, responsibilities and the skills sought by these offices continue to focus on technology and bureaucratic norms.

4.3.3.1   Redefine Organizational Structure

The ideal candidate to run NEMIS must be someone who has expert credentials in the ability to use primary data to infuse policy with indisputable, and dispassionate facts. Additional qualifications may include experience in survey, census, and database management, but they must be complementary to the individual's clarity and understanding of the importance of evidence to strengthen (or weaken) policy positions. From the leader of the organization, on down, this must be the principle by which EMIS operations in Pakistan need to be run. To achieve this, means to dismantle the existing structures that define these organizations. The change must begin however, at the top, in the federal government, at the helm of NEMIS.

Appendix 1: Scope of Work

Restructuring EMIS

Scope of Work

A. Objective of Consultant's Work

The consultant will be required to assess the policy framework under which EMIS is operating, identify shortcomings in the existing policy structure and suggest improvements in policy and planning.

B. Reporting

The Consultant will report to and Dr. Salman Humayun, Component Leader, Policy and Planning, or his designee.

C. Specifics of the Assignment

The consultant will be required to:

1. To analyze the policy framework under which EMIS is operating.

2. To review the relationship of the national and provincial EMIS cells with each other, with the Academy for Education Planning and Management, and with other departments within the Ministry of Education.

3. To assess the process of collecting, aggregating, managing, and updating data.

4. To assess the flow of information/data from data collectors at the local level to its compilation at the provincial/ national level.

5. To identify gaps and weaknesses in the present structure of EMIS.

6. To suggest policy improvements to reform EMIS.

7. To prepare a report that provides a comprehensive evaluation of the policy context in which EMIS is operating, highlights shortcomings, and provides viable recommendations for improvement and sustainability.

D. Scope and Deliverables

The consultant will undertake a study for a total of twenty days between Monday 19th January, 2004 and Tuesday, 10th February. The consultant will compile his/her findings in a comprehensive report that presents an evaluation of EMIS and the policy framework under which it operates, and gives specific recommendations for improvement.

F. Important Dates:

Wednesday, 21st January: Plan of Work due

<u>Friday 6th February:</u> Draft Final Report due

<u>Tuesday 10th February:</u> Final Report due

G. Consultant Requirements:

?? The consultant must have a Masters degree and a minimum of 5 years experience with Pakistan's education sector. The experience should include at least 3 years in education planning and management.

?? The consultant must be familiar with the devolved delivery of the education system and its apparatus for collecting, compiling and managing data.

?? The consultant should have experience in conducting policy assessments.

?? The consultant must have strong English and report writing skills.

?? The consultant must have excellent communication and inter-personal skills.

Appendix 2: Timeline of Work

Week	Activities
Week 1 (January 21-January 24)	Meetings, Literature Review
Week 2 (January 26-January 31)	Workplan, Travel (Karachi)
Week 3 (February 6-February 7)	Literature Review
Week 4 (February 9-February 14)	Travel (Quetta, Sukkur, Khairpur)
Week 5 (February 16-February 21)	Drafting research study, drafting report
Week 6 (February 23-February 28)	Drafting report

Appendix 3: List of Meetings Conducted

Date	Person & Position	Organization	Subject of Meeting
January 23	Rehan Afzal (Manager-ICTs)	National Commission on Human Development	Education data collection regime at the NCHD
January 26	Nargis Sultana (Program Officer) Mark Poston (Education Adviser)	DfID, Islamanbad	DfID's work on EMIS in Punjab & NWFP, other donor activities
January 27	Ilyas Soomro (Director SEMIS)	Research, M&E and EMIS Directorate, Ministry of Education, Government of Sindh	SEMIS—HR, Process, Outputs and Issues
January 28	Iqbal Durrani (Additional Secretary)	Ministry of Education, Government of Sindh	SEMIS, Education Policy and Province vs. District Issues
February 9	Salma (Additional Director) Hanif (Programmer) Waheed (GIS Specialist)	BEMIS Wing, Directorate of Education, Government of Balochistan	BEMIS—HR, Process, Outputs and Issues
February 10	(EDO-Education) (EDO-Finance & Planning) (Tehsil Nazim)	District Government, Turbat	Education Data and its Importance in Education Policy

February 10	Inder Lal (Provincial Chief) Salma Khan (Program Officer)	UNICEF Office, Quetta	Education data collection regime at UNICEF
February 12	Tehseen Soomro (DO-EMIS) Mrs. Nasim Ijaz (DO-Headquarter) Amanullah (DO-Elementary) Sakhawat Ali (Superintendent)	EDO (Education) Office, District Government Kahirpur	District EMIS activity, operations and issues
February 12	Zamir Memon (Steno-Typist), Ali Raza Gopang (Assistant) Abdul Ghani/Pir Bux (Naib Qasid)	EDO (Education) Office, District Government Sukkur	District EMIS HR
February 21	Dr. Fayyaz Ahmed (Deputy Education Adviser)	Planning Wing, Ministry of Education, Government of Pakistan	Use of Educational Data in Policymaking
February 23	Daud Shah (Joint Director) Nasir Amin (Systems Analyst)	NEMIS Wing, Academy for Education Planning and Management, Government of Pakistan	NEMIS-HR, Process, Outputs and Issues
February 23	Musharraf Rasool Cyan (Team Leader)	Decentralization Support Program, ADB/Government of Pakistan	Linkages between DSP and ESRA on Educational Data Issues
February 23	Osman-ul-Haq (IT Specialist)	Centre on Poverty Reduction and Income	Preparation of GIS Maps & Data by Centre

		Redistribution, Planning Commission, Government of Pakistan	

Appendix 4: Sindh's District EMIS Cells

Sanctioned and Actual Strength in Sindh's District EMIS Cells

Total Sanctioned Positions = 160
Total Occupied Positions = 29

District Dadu	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Javed Ahmed Khawaja	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Hyderabad	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Ehsan Ellahi Memon	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
Parvez Ahmed Bhatti	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Thatta	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Hanif Memon	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Mirpur Khas	
Name of Officer	**Designation & Grade**
Munir Abdul Y. Memon	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
Hamid Mehmood	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Mithi	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
Ayoub Memon	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Sanghar	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Karachi	
Name of Officer	**Designation & Grade**
Nasir Abo	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
Mikail Ali Soomro	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)

	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Jacobabad	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Qayoum	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Larkana	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
A. Khalique	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Shikarpur	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Ikramullah Soomro	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
Mujeeb-ur-Rehman	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Khairpur Mirs	
Name of Officer	**Designation & Grade**
Tehseen Ahmed Soomro	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
Sakhawat Ali	Superintendent (BPS-16)

	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
Saleem	Assistant (BPS-11)
	Data Input Operator (BPS-6)
Shafi Mohammed	Naib Qasid (BPS-1)
Hussain Bux	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Naushero Feroz	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Aizaz Ali Soomro	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
M. Siddique	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

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District Nawabshah	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Yahya Memon	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Ghotki	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
Mujahid	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Badin	
Name of Officer	**Designation & Grade**
	Deputy District Officer (BPS-18)
Javed Ahmed Khowaja (Add. Charge DDO)	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
	Steno-Typist (BPS-12)
	Assistant (BPS-11)
	Data Input Operator (BPS-6)
	Naib Qasid (BPS-1)
	Chowkidar (BPS-1)
	S.Worker (BPS-1)

District Sukkur	
Name of Officer	**Designation & Grade**
Abdul Khaliq Mehr	Deputy District Officer (BPS-18)
	Computer Programmer (BPS-17)
	Superintendent (BPS-16)
	Computer Operator (BPS-12)
Zamir Ahmed Memon	Steno-Typist (BPS-12)
Ali Raza Gopang	Assistant (BPS-11)
	Data Input Operator (BPS-6)
Abdul Ghani, Pir Bux	Naib Qasid (BPS-1)
AllaDevaio	Chowkidar (BPS-1)
AllaDitta	S.Worker (BPS-1)

Appendix 5: AEPAM Board of Governors

Board of Governors of AEPAM

Chairman and Ex-officio Member	Federal Secretary Ministry of Education, Islamabad
Secretary and Ex-officio Member	DG, AEPAM Member Secretary
Ex-officio Member	Provincial Education Secretaries (5) (Four Provinces including Secretary Education AJK)
Ex-officio Member	Representative of the UGC not below the rank of a member of the commission Member
Ex-officio Member	Director, Pakistan Institute of Development Economics
Ex-officio Member	Representative of the PMLC not below the rank of a Member of the Commission
Ex-officio Member	V.C, Allama Iqbal Open University Member
Ex-officio Member	Chief, Education Section, P&D Division Member
Ex-officio Member	Financial Adviser (Education) Member
Prominent Educationists Punjab *Life Time Member*	Dr. Tahir Hussain, (Ex-Additional Secretary, Ex-V.C, AJK University and Ex-DG, AEPAM)
Prominent Educationists Punjab	Professor Dr. Mrs. Munawar Mirza, Ph.D. (USA), Director, IER, University of the Punjab new campus, Lahore Member
Prominent Educationists NWFP	Dr. Abdul Ghafoor, M.A. Gold Medalist, Ph.D. (USA), Ex-DG, AEPAM and Ex-Chairman, PMLC
Prominent Educationists SINDH	Professor Dr. Noor Muhammad Memon, Director, Institute of Education Research Shah Abdul Latif University, Khairpur Mir, Sindh
Prominent Educationists BALOCHISTAN	Professor Dr. Mahmood Ali Shah, Chairman, Department of Political Science, University of Balochistan, Quetta Member