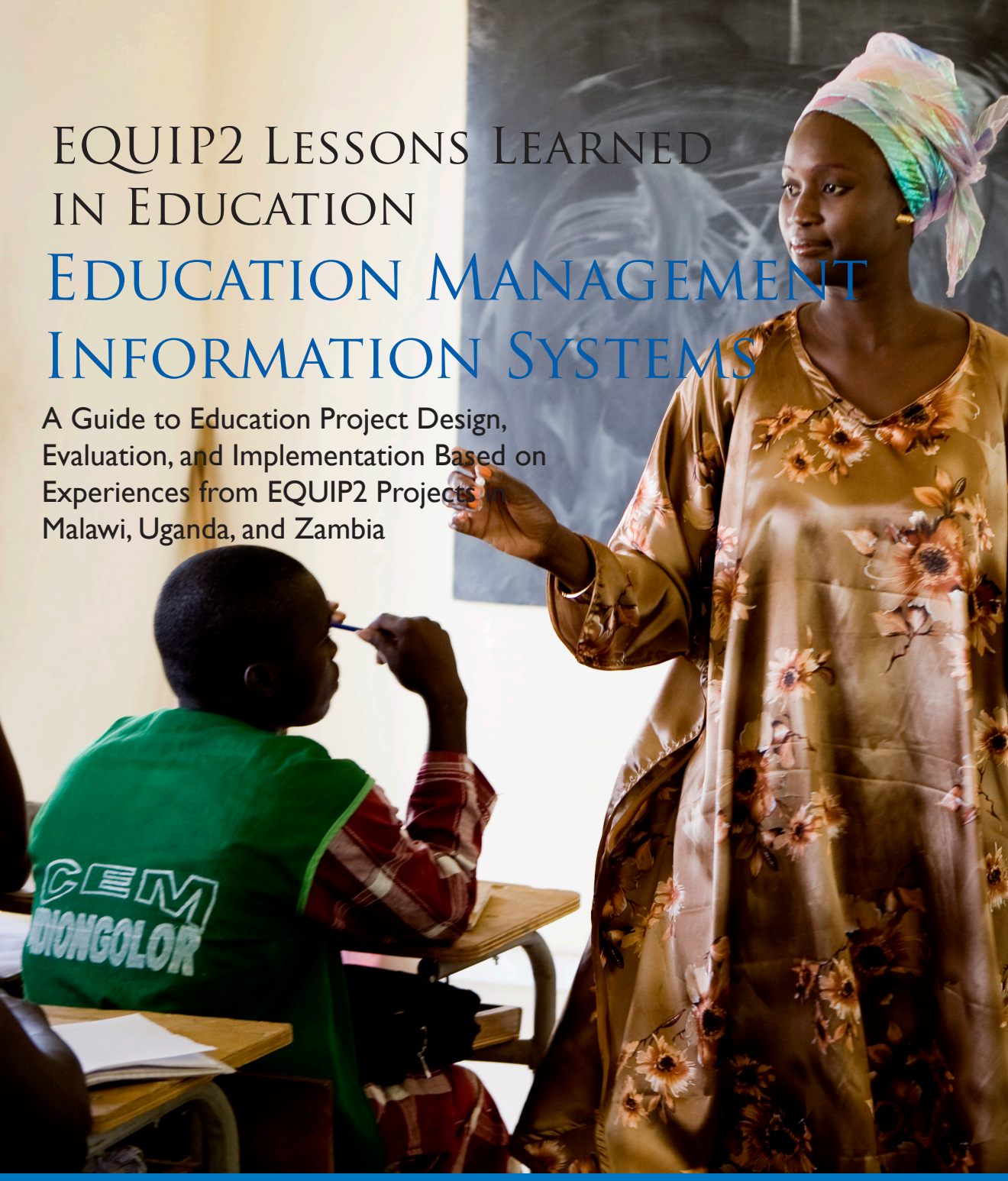


EQUIP2 Lessons Learned in Education

Education Management Information Systems

A Guide to Education Project Design, Evaluation, and Implementation Based on Experiences from EQUIP2 Projects in Malawi, Uganda, and Zambia

By Marcia Bernbaum, Ph.D. and Kurt Moses

USAID
FROM THE AMERICAN PEOPLE

EQUIP2
Educational Quality Improvement Program
Policy • Systems • Management

EQUIP2: Educational Policy, Systems Development, and Management is one of three USAID-funded Leader with Associates Cooperative Agreements under the umbrella heading Educational Quality Improvement Program (EQUIP). As a Leader with Associates mechanism, EQUIP2 accommodates buy-in awards from USAID bureaus and missions to support the goal of building education quality at the national, sub-national, and cross-community levels.

FHI 360 is the lead organization for the global EQUIP2 partnership of education and development organizations, universities, and research institutions. The partnership includes fifteen major organizations and an expanding network of regional and national associates throughout the world: Aga Khan Foundation, American Institutes for Research, CARE, Center for Collaboration and the Future of Schooling, East-West Center, Education Development Center, International Rescue Committee, Joseph P. Kennedy, Jr. Foundation, Michigan State University, Mississippi Consortium for International Development, ORC Macro, Research Triangle Institute, University of Minnesota, University of Pittsburgh Institute of International Studies in Education, Women's Commission for Refugee Women and Children.

EQUIP2 Lessons Learned in Education

Education Management Information systems

Marcia Bernbaum, Ph.D. and Kurt Moses

2011

This paper was made possible by the generous support of the American people through the United States Agency for International Development (USAID) under Cooperative Agreement No. GDG-A-00-03-00008-00. The contents are the responsibility of FHI 360 through the Educational Quality Improvement Program 2 (EQUIP2) and do not necessarily reflect the views of USAID or the United States Government.

Contents

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
AIR	American Institutes of Research
AOTR	Agreement Officer's Technical Representative
BBC	British Broadcasting Company
DFID	Department for International Development (Great Britain)
CIA	Central Intelligence Agency
EDC	Education Development Center
EDSA	Education Decentralization Support Activity
EFA	Education for All
EMIS	Education Management Information System
EQUIP	Education Quality Improvement Program
FTI	Fast Track Initiative
GDP	Gross Domestic Product
GIS	Geographic Information System
GTZ	German Agency for International Development
HDR	Human Development Report
HIV	Human Immunodeficiency Virus
IT	Information Technology
JICA	Japanese International Cooperation Agency
LAN	Local Area Network
M&E	Monitoring and Evaluation
MOES	Ministry of Education and Sports
NDP	National Decentralization Policy
NESP	National Education Sector Program
NGO	Non Government Organization
PEA	Primary Education Advisors
PIF	Policy Investment Framework
PLE	Primary Leaving Examination
PMEC	Payroll and Establishment Control System
QTS	Questionnaire Tracking System
RFA	Request for Application
SMS	Short Message Service
SWAp	Sector Wide Assistance Program
UNDP	United Nations Development Program
UNICEF	United Nations International Children's Emergency Fund

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEB	Uganda National Examinations Board
USAID	United States Agency for International Development
WAN	Wide Area Network

Acknowledgments

The authors would like to take this opportunity to express their sincere thanks and appreciation to the many individuals that made this report possible. Audrey-Marie Schuh-Moore, FHI 360 EQUIP2 Director, took the lead in providing excellent oversight and guidance from the inception of this exercise through to reviewing and commenting on several versions of the report. Erik Lundgren of FHI 360's Global Education Center, provided invaluable assistance in organizing the interviews, obtaining background documentation, and providing feedback on initial drafts. Brian Dooley, also of FHI 360's Global Education Center assisted in finalizing the report and preparing it to be sent to print.

Twenty three individuals involved in the design and implementation of the four EQUIP2 projects focusing on education management information systems that form the focus of this report graciously set aside time to be interviewed for this study and, in many instances, to review the interview write ups to ensure their accuracy as well as approve quotes that appear in this report. These individuals include USAID personnel assigned to Uganda, Malawi, and Zambia involved in designing the EQUIP2 projects and overseeing their implementation, FHI 360 personnel stationed in Uganda, Malawi, and Zambia (Chiefs of Party and technical advisors) and Washington (home office Project Directors), and former Ministry of Education personnel. Their observations and insights, which form the principal source of information for this report (supplemented by available documentation), have been invaluable. The names of these individuals appear in Annex 4 of the report.

A special thanks to the following individuals who took the time to review the final draft of the report for accuracy and readability: We received a number of excellent comments and suggestions that we have incorporated into the report. These individuals are: Audrey-Marie Schuh-Moore (FHI 360), Felix Alvarado (FHI 360), Sergio Sommerville (FHI 360), Anthony Bloome (USAID, and Christine Pagen (USAID).

Finally, a note of appreciation to Patrick Collins and Kristi Fair, USAID EQUIP2 Agreement Officer's Technical Representatives in Washington, who provided the inspiration for this exercise and provided overall conceptual guidance.

Executive Summary

We undertook reviews from November 2010 to January 2011 of four EQUIP2 Associate Awards implemented in Uganda, Malawi (2), and Zambia from 2003 to the present. Each reviewed project focused on education management information systems (EMIS) or had an EMIS component. The principal objective was to gain insights and lessons learned from experienced development practitioners on designing, implementing, and evaluating projects that focus on EMIS or have EMIS components. The review did not focus on technical aspects of EMIS—databases, languages, etc., as this is best left to technical specialists. The primary audience for this work is USAID education officers.

This work involved both document review, and semi-structured interviews with 23 individuals who designed and implemented these Associate Awards, including: USAID staff responsible for designing them and overseeing implementation, monitoring, and evaluation; the EQUIP2 Chief of Party, technical advisors, and AED home office backstops; and current or former Ministry of Education (MOE) officials involved in implementing the Associate Awards.[1]

EQUIP2 Associate Awards That Focus on EMIS or Have an EMIS Component

MALAWI: Education Sector Policy, Planning, EMIS Support Activities, and Higher Education Strategic Plan Development
Funding: $1,985,620, increased to $2,704,581
Time frame: 2003–2008
Purposes: Improve strategic planning and management for Policy Investment Framework (PIF) implementation, strengthen EMIS, and develop strategic business plans for the University of Malawi and Mzuzu University.

MALAWI: Education Decentralization Support Activity
Funding: $11,559,643
Time frame: 2009–2012
Purpose: Strengthen the decentralization implementation at the Ministry of Education headquarters, district and school levels to support system progress in attaining National Education Sector Plan 2008–2018 goals.

1 More information on the methodology may be found in pages 3 to 5 of this report.

UGANDA: Strengthening of Uganda Education Management Information System
Funding: $999,243, increased to $1,506,390
Time frame: 2003–2005
Purpose: Conduct a school mapping exercise (GIS); institutionalize the EMIS; increase the level of training for EMIS; create a twice-yearly primary school mini-census; complete a Wide Area Network (WAN) using cellular techniques; and coordinate and supervise a long-term education Strategic Investment Plan.

ZAMBIA: Support to the Ministry of Education Strategic Plan in Improving Imformation and Strengthening Policy Implementation
Funding: $13,973,991, increased to $26,473,991
Time frame: 2004–2011
Purpose: Improve information for efficient resource management and strengthen education policy implementation.

Below is an organizing framework for understanding the EMIS lessons—which are summarized under eight topics — for designing and implementing incipient or emerging Education Management Information Systems. Two additional lessons address challenges in designing programs to support Ministries of Education that require more sophisticated data for decision making. The key conclusions for each lesson learned are listed below followed by implications for USAID education officers.

This Executive Summary, and the report, end with recent innovations that, while not necessarily a part of past and current EMIS projects, provide valuable options for the future.

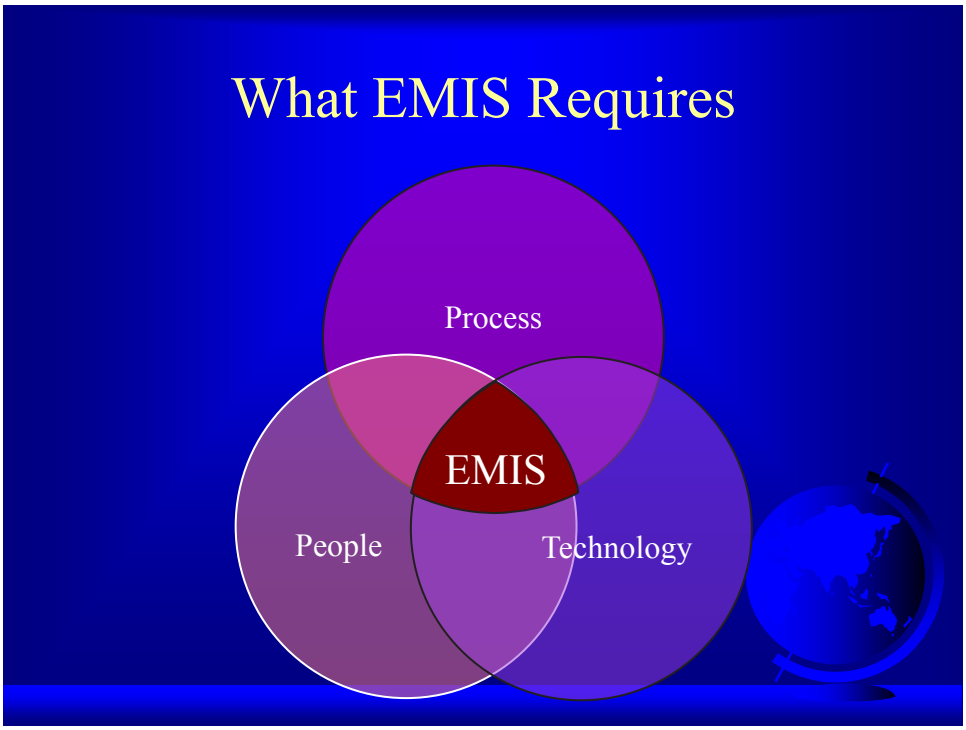
ORGANIZING FRAMEWORK

All EMIS work is composed of three basic components: people, process, and technology, as is illustrated in Figure 1.

In most development work, the combination of the people (leadership, managerial, and technical) and process (administrative requirements, timelines, job skills, and funding) are frequently the most difficult to align with the goal of EMIS, namely: providing quality education information in a timely, cost-effective, and sustainable manner, at all administrative levels, and to support selected operational functions. What ultimately drives EMIS success is being able to answer the questions that education stakeholders raise, and providing consistently understandable answers. Therefore, while new technologies are making certain factual information more readily available, there remains a key requirement to develop the capacity for interpretation and analysis of these resulting "facts." Making information accessible to

a broad audience, with varying levels of preparation and numeracy, is the continuing challenge of any EMIS effort. Since education fundamentally occurs at the school level, and can only, fundamentally, be measured by its positive effects on students, the change in student learning must be the fundamental basis for understanding education systems operation.

Figure 1. What EMIS Requires



LESSONS LEARNED FROM THE EQUIP2 ASSOCIATE AWARDS

1. ***With adequate external assistance Ministries of Education with incipient EMIS systems can generate Annual School Census reports and good response rates within two to three years. However, in the absence of ongoing external support (particularly in countries that have not reached a certain stage of resources maturity – human, technology, processes) and strong political will linked to a commitment to measure progress, these results can slip.***

Implications for USAID education officers

When designing support for an incipient EMIS effort, build in sufficient resources and adequate technical assistance over a three- to five-year period so that systems can show concrete results in a relatively short period to produce "this year's data this year" along with good response rates (response from over 90% of individual schools is an appropriate target). However, without

continued political will, resources, and managed effort (either by the MOE and/or donors), these gains can quickly erode.

2. ***Achieving data quality begins at the school level and takes more time, attention, and funding than one might expect.***

Implications for USAID education officers
Ensuring the quality of the data collected from schools and the perception that these data are of high quality are key for credibility and need to be an important part of any EMIS donor support. EMIS project designs should ensure that headmasters who provide school-based data understand the use, importance, and relevance of annual or more frequent EMIS exercises. Projects should include technical assistance and training for EMIS staff to develop the capacity to verify data and to assist with initial data verification exercises. This training should always include the closest administrative support unit, e.g. county or district, and, where possible, the participation of parents or local stakeholders. Parents can also be part of concrete steps to assist MOEs to perform data verification and to build a budget "line item" into yearly EMIS budgets to fund such work.

3. ***EMIS support should extend to the district and school levels. However, EMIS support at more local levels should not be at the expense of the central Ministry EMIS.***

Implications for USAID education officers
In designing an EMIS program that focuses, as it should, on support at the sub-national level (provinces, districts, and schools), examine the needs of the EMIS in its entirety. Is USAID's support both strengthening data gathering and use at the school, district, and provincial levels and contributing to utilizing these data for decision making at these levels? Is the central EMIS communicating adequately with district and provincial EMIS and are these data also being used for decision making at the center? Does the center have the capacity, without external assistance, to continue generating timely, credible data and are these data being used for decision making?

4. ***The challenge of education management information systems is finding a way to ensure that "hard data" generated from the systems are factored into decision making.***

Implications for USAID education officers
In working with host country counterparts, invest in appropriate training and knowledge development for those who interpret information and make

it available to senior and mid-level managers for use in taking important decisions. Training should include preparing "just-in-time" briefs, eye-catching reports and presentation of data, and other strategic communication methods. Design EMIS programs so that project-supported EMIS technical advisors guide their counterparts to use EMIS data for decision-making.

5. ***Fundamental for EMIS success is a comprehensive and ongoing capacity building program for Ministry of Education staff at multiple levels that factors in the inevitable staff turnover, and ensures that existing staff acquire new skills as new requirements emerge.***

Implications for USAID education officers
Build in sufficient funding and support to train staff and provide capacity building at various levels, including "training-of-trainer" as well as "on-line" or mediated instruction (DVD or CD libraries) capabilities, to account for the inevitable staff turnover. As time goes on, staff that has already been trained will need to be trained in new technologies. Look for creative, user-friendly, and lower cost ways of making training available, including "power user" EMIS groups and HELP screens. Where possible, build in a mechanism for evaluating the skills individuals acquired as opposed to just keeping track of number of individuals trained on different topics. Tracking skill development will allow programs to better align training programs and measure the cost effectiveness of resource use. Finally, find ways for MOEs to fund ongoing training at all levels in EMIS operations and to use EMIS information in decision making.

6. ***Having the information required to establish realistic targets and to track progress in reaching these targets in a donor-supported program creates strong incentives for USAID and other donors to support the establishment and/or strengthening of EMIS systems.***

Implications for USAID education officers
Where sector support programs, financed by multiple donors, require accurate and timely data for establishing targets and tracking implementation progress it is critical to support the establishment/strengthening of EMIS systems. In designing a program to support EMIS capabilities, USAID and/or other donors should collaborate with MOEs to establish frequent measurements of key performance indicators so that education systems have some warning regarding their performance before a high-stakes outcome affects a donor decision to withhold funding when the MOE has not met agreed-upon targets (see Annex 1 for examples of target setting, dashboards, and Key Performance Indicator use).

7. ***Sustainability approaches require ongoing effort and need to be a part of EMIS projects from the very early stages***

Implications for USAID education officers

Sustainability approaches that include comprehensive training programs, creative approaches to human resource issues, and changes in policies and procedures, as appropriate, need to be a part of projects from the very early stages. When senior management requires, understands, and uses information generated, others see that the information is of importance to the operation of the education system. Good information models (which may focus on product and outputs) establish a concrete sense of the goals of an effective EMIS. A valuable role for USAID may be to build into project design assisting the MOE to work with the Ministry of Finance to build recurrent costs for EMIS into annual MOE budgets.

8. ***New technologies and increasingly sophisticated demands on EMIS systems will periodically require technical expertise that may not be available within the government or from local contractors.***

Implications for USAID education officers

When designing an education program, determine whether existing Ministry of Education information systems have the capacity to generate and process increasingly sophisticated demands for information as well as take advantage of new information technologies. If this capacity does not exist and this information is critical for broader project tracking/monitoring, consider building into project design assistance (technical, software, staff support, other) required to meet these needs. In addition, look for ways to assist MOEs to identify financial resources and technical expertise to address future needs for increasingly sophisticated information and technologies. Missions should consider empowering the local private sector to provide more specialized expertise—for example, in Central America, some private contractors are now providing continuing support to Ministries for certain elements of their EMIS systems. By rebidding contracts for this support at least every three years, it is possible to create a more "level" competitive field, and encourage healthy competition. This means, however, that Ministry personnel need to become better "technical managers" rather than just generalist or even technicians.

ADDITIONAL LESSONS FROM BROADER EXPERIENCE

9. ***Increasingly, political and policy leaders rely on Key Performance Indicators (such as student-teacher ratios, percent of students reading at grade level) to make policy decisions. EMIS systems need to be prepared to assist in channeling questions in a way immediately relevant to their needs.***

Implications for USAID education officers

Be aware of the kinds of information that policymakers increasingly need to make decisions, such as trends on Key Performance Indicators. Build in to the project design support MOE staff will need to obtain timely and credible information, packaged so that policymakers can use it. This may go beyond providing what has traditionally been support for timely collecting and reporting on basic education statistics.

10. ***The requirement to provide "quality education" means additional, important demands on EMIS and the allocation of more and more consistent resources for information.***

Implications for USAID education officers

In designing EMIS support, examine whether key decision makers (MOE, other ministries, Districts or Provinces (under decentralization), USAID, other donors) are going to need data, available on a sequential basis, to assess changes in education quality. If the answer is yes, explore options (including the implications for cost, level of effort, and time to generate the data) for assisting MOEs to generate data that make it possible to assess changes in education quality over time. One option includes linking EMIS databases with national performance testing databases. Another option is to identify Opportunity to Learn (OTL) and Literacy indicators and set up a means of collecting and interpreting data on these indicators on an ongoing basis through the EMIS.

EMERGING TECHNOLOGIES AND APPROACHES

The following technologies and approaches hold great promise for developing country EMIS as they all tend to both democratize, and provide information faster and in more useable formats:

- **Cell Phones.** Cell phone use has increased exponentially in the developing world. There are now more cell phones in use in 2nd and 3rd world nations than in the entire "developed" world. Cell phones already reach more schools than computers have or will in the next five years—and will form an essential part of any future EMIS. Cell

phones are already used to "log" school locations and to communicate key information such as "attendance or enrollment data" to district or national offices rapidly. They are typically more "sustainable" because people want them for multiple reasons (virtually every person or family wants to communicate)—but mainly because they allow for relatively cheap communication. Cell phones can also provide a relatively low cost option for communicating between users and suppliers of key school necessities. Some major journals have begun to call Cell Phones, the "computers for Africa" as just one example of the understanding of both the commercial feasibility, but as well the widespread acceptance and use of such devices.

- **Tablet Computers.** Tablet computers, and, to some extent "netbooks," hold the promise of both lower cost and highly portable and adaptable instruments to place more information into more stakeholders' hands than ever before. Tablets lend themselves to classroom observation, easy presentation of graphics, can be used with minimal training, and lower the cost for moving educational information closer to the school and classroom level. They also support the Regional and National level's need to be informed.

- **Google Earth and Digital Mapping.** This extremely powerful geographic presentation application, now available on almost any computing device, allows a rapid presentation of the "status" of any social sector, but particularly education for very low cost. Virtually any digital data (photos, facts, video) can be linked to its geographic locus—and allow even modestly trained personnel to understand the significance of allocating resources. It also provides, through highly visual means the opportunity to plot progress. Annex 1 includes several examples of "digital mapping" already successfully in use.

- **Planning Simulation and Business Intelligence.** Simulation/ projection has been a "staple" of five year plans for many years. The dramatic increase in the power of EXCEL spreadsheets (which now incorporate many advanced features) and other tools allows EMIS systems to routinely accommodate forward planning. Hence, while current, managerially oriented information remains at the heart of an EMIS, the ability to quickly translate accurate "base information" into projected future outcomes is increasingly important. Several examples of both EXCEL based projection approaches that are highly graphical are provided in Annex 1. Moreover, the use of Business Intelligence software (which can "assemble" data from a variety of sources—both

digital and manual) can dramatically increase the speed and ease of use of information. Tools such as Business Objects, Hyperion, or advanced SAS, have all proved effective in this regard. One element of these programs is the ability to not only provide graphs and charts, but to create "dashboards" that dynamically indicate progress or decline according to established targets. This information can, in turn, be communicated either to Web sites, or sent to cell phones with "smart" capacity. However, these more sophisticated tools only make sense if they continue to answer quickly and accurately (which is dependent upon solid information from schools and teachers) the questions that policymakers or stakeholders are asking.

- **Open Source Software.** Developed as an alternative to proprietary software driven by specific commercial interests (and often requiring both high licensing and maintenance fees), "open source software" has become more widespread and increasingly present in many educational applications. A number of NGO-led efforts have made use of "open source" free software to create special applications. Many university and pre-university programs now train personnel in "open source" approaches. Many EMIS systems will likely become a mixture of both "open source" and proprietary software for the near-term future—open source often requires more training for the user, whereas many proprietary systems often require a large commitment and more funds "up front" in exchange for organized training and certain performance guarantees. The key is to provide points within EMIS technology where different applications can be accessed or exported so that alternatives are available over time. Examples of some recent, generally "open source" software approaches include: Android, Linux, Java, and a massive variety of open source applications available on the Web.

- **Access to the World Wide Web.** Increased access to the Internet is the wave of the future—every nation, with rare exception, aspires to access to the information and economic benefits that the Internet provides. While it clearly has transformative effects on the culture, not all of which can be predicted, the Web is a powerful adjunct to better education systems—both administratively and academically. Its introduction in a formal system of education needs to be calibrated to enhance and not undo positive practices. The Web can dramatically increase the ability to be responsive to education need and shortages—if linked to appropriate political and administrative units. Accordingly every future EMIS system needs to plan for and incorporate it as countries increase access to the Web.

The next ten years will see more technological and political progress capable of improving education than has occurred in the last ten years. This progress can empower students, teachers, parents and schools to be more competent than ever before. The EMIS challenge is to adapt to a much more decentralized, democratic and self-empowered education system whose demands for quality will drive the next wave of education for all.

Background

Between November 2010 and January 2011, documents were reviewed and semi-structured interviews were carried out with 22 individuals involved in designing and implementing four EQUIP2[2] Associate Awards carried out between 2003 and the present in Uganda, Mali, and Zambia. All four Associate Awards either focused on building or strengthening education management information systems (EMIS) or had an EMIS component.

The principal objective of this review has been to gain insights and lesson learned from experienced development practitioners on designing, implementing, and evaluating projects that focus on EMIS or have EMIS components.[3] The review did not identify lessons on technical aspects of EMIS. The primary audience is new USAID education officers.

Section I discusses the review's methodology and provides individual overviews of each of the four EQUIP2 Associate Award experiences. Section II discusses findings, lessons learned, and insights as well as additional lessons learned from broader experience.

This paper contains four annexes. Annex 1 is a table listing what worked and what didn't work across the country cases. Annex 1 summarizes each Associate Award experience in a case study. The interview protocol is in Annex 3. A list of the interviewees for each country and their respective roles in designing and implementing the Associate Awards is in Annex 4.

A. INTRODUCTION TO EMIS

An Education Management Information System (EMIS) can be defined as a comprehensive system that brings together people, practices, and technology to provide quality education statistics in a timely, cost-effective,

2 EQUIP stands for Education Quality Improvement Program. EQUIP2, headed by the Academy for Educational Development (AED), is one of three Leader with Associate (LWA) awards. EQUIP2 focuses on policy, systems and management. EQUIP1 (American Institutes of Research—AIR) focuses on classrooms, schools, and community; and EQUIP3 (Education Development Center—EDC) focuses on out-of-school youth, learning and earning.

3 Other EQUIP2 associate awards reviews focus on: policy dialogue, decentralization, country-led development, professional development, secondary education, and student assessment.

and sustainable manner, at every administrative level, and to support selected operational functions.

Although many EMIS issues remain as they were almost 10 years ago, donors' and the world's attention recently has refocused from access to quality in education and the advent of newer technologies. Their rapid and thorough adoption in the second and third world was hardly foreseen ten years ago and has had an impact on the direction of EMIS.

The key lessons in the next section center on some fundamentals about EMIS, including:

- EMIS data need to be accurate.
- EMIS data need to be timely.
- EMIS data need to be reliable.
- EMIS data need to be understandable.

Most existing systems are some compromise of the above four factors. Accuracy can require more time than is allowed. Timeliness may require some relaxation of complete accuracy. Reliability is affected by external factors like funding, manpower, and political events. Turning data into information—creating meaning from "facts"—is a constant challenge of making data, then information, then knowledge useful for decision making.

The repeated lesson is that creating a sustainable, workable EMIS depends on three factors:

1. The right PEOPLE, motivated to perform and skilled in their work
2. The right PROCESSES that reduce duplication and reinforce accuracy and accountability
3. The right TECHNOLOGY, appropriate to the state of the country, and the reliability of its infrastructure

People are frequently the slowest to change and the hardest to affect directly. Both technology and processes can be altered quicker, but people can delay reinstituting new value structures and working methods. People-related issues typically are resolved through:

- Modeling "good behavior" in terms of skills use, work habits, and approaches to learning new skills
- Making appropriate technical assistance available when needed to keep a small problem from "festering" and becoming bigger

- Training repeatedly and sufficiently until concepts and practices are reinforced

Processes are critical for the effective flow of information in a country. Multiple layers (national, regional, district, and school) need accurate and appropriate information for the responsibilities assigned. For most emerging countries, the process around information transfer is extremely burdensome for schools; most headmasters receive 10 to 15 requests for almost the same information from multiple sources in a given term. This reduces attention to managing a school, reduces accuracy, and creates confusion at higher levels. Information practices need to follow at least the following:

- Processes must ensure that information is available to those who can make use of it quickly.
- Processes should reduce the number of times schools and districts answer the "same question in a slightly different form."
- People at every level should check the data as they are developed, entered, edited, and distributed; as many eyes as possible should see the final product.
- With the increased focus on quality education, accurate and useful EMIS information at the school level is even more critical—since only the school, ultimately, can engender quality education.
- Processes need to shift as the general knowledge environment shifts.

Technology is often the most noticeable aspect of EMIS, but it is only a part of the education information solution. Increasingly, laptops are replacing desktop computers (more rugged, just as powerful using less power, consolidated into one piece, and often more reliable). As importantly, smaller computers (netbooks/"classmates"/even tablet computers) can now be used with much lower requirements for cooling, security, and electricity. Only some of these technologies have been available over the last six years—hence their full application has not yet been tested. Cell phones have gotten much more powerful—capable of transmitting data via SMS or GPRS—in useable formats for "urgent" or high-demand information. Software has also improved with simpler to use software like EXCEL, ACCESS, or MySQL with enhanced features and better training, offering more options even at the school level. For larger systems, there are many more alternatives for school-based EMIS (from open source and from proprietary vendors) as well as integration of all the various technologies—computers, servers, cell-phones, and paper make data more manageable.

The experience from the EQUIP2 EMIS Associate Awards is intended to make these conclusions more concrete and useful in both the design and execution of future USAID projects. The basic requirements for EMIS must be supported—since the multiple end users will turn information into better actions.

B. METHODOLOGY

This study used a qualitative approach to better understand human behavior and the reasons that govern it. The qualitative method investigates the why and how of decision making, not just what, where, when. The main methods used included interviews and document review.

This review is not based on an in-depth evaluation of each Associate Award. Visits were not made to each country to interview a wide variety of actors. A comprehensive review was not made of documents generated by or related to the Associate Award.

Preparation of interview protocol, summary/matrix, consent form for each project

An interview protocol was developed and piloted. A summary and matrix for each country case was developed based on information taken primarily from the RFA and AED's proposal to be used as a reference point during the interviews.[4] An interviewee consent form was prepared. Key topics raised in the interview protocol (available in Annex 3) are in the textbox below.

Topics Addressed in Interview Protocol Related to EMIS

- EQUIP2's development hypothesis (or what was to be accomplished toward the project goal), the assumptions underlying the hypothesis, and their validity.
- Key project activities: what they were, why they were selected, the assumptions linked to the activities and their validity, whether the activities led to the expected outcomes, if not, why.
- Adequacy of time frame and funding for what the EQUIP2 project wanted to accomplish.
- Extent to which the project built in sustainability, the extent to which it was achieved and why.
- Whether the project led to outcomes that were expected and, if not, why.
- Adjustments made, if any, to activities, budget, and timeframe.
- Project monitoring and evaluation: indicators selected to assess project impact and track activity progress in EMIS activities, which were most useful and why, how the information collected was used, would other indicators have been more useful.

4 The summary and matrices for each project contain information on: life of project funding, project start and end dates, the country and education context, role of other donors, the project purpose and key activities.

- Successes and challenges: aspects of the project that were most successful and why, biggest challenges encountered in managing the project, and how addressed.
- Ability to adapt to changing circumstances or reprogram or change aspects of the program.

Interviews carried out using the protocol and summary documents

The protocol was used to carry out interviews of approximately an hour-and-a-half each. Four to eight individuals were interviewed for each country case. The following individuals were interviewed: (1) USAID staff who designed the RFAs and oversaw implementation of the Cooperative Agreements; (2) AED and sub-contractor staff who prepared EQUIP2's proposal in response to the RFA, implemented the project, and backstopped the project from the United States; and (3) where possible host-country counterparts who implemented the EQUIP2 Associate Award. A total of 22 individuals were interviewed for four EQUIP2 Associate Awards in the three countries.[5]

Interviews written up and shared with each interviewee

Each interview was written up and shared with the interviewee for review/comment. Interviewees were assured confidentiality. They were also told that if they were quoted (either in name or indirectly) in this or another document their approval would be sought in advance. All quotes have been reviewed and approved by the individual quoted.

Other sources of information accessed

To supplement the information obtained for the interviews, several documents were reviewed for each EQUIP project. They included: RFAs, end of project reports (where available), and quarterly, semi-annual, and/or annual reports. In addition, where possible, monitoring and evaluation (M&E) plans and reports for each project were reviewed. Country searches were conducted via Google to identify, download, and review relevant documents on each country context, especially as they related to EMIS. In addition, basic statistics (education and other) were obtained from the most recent United Nations Human Development Report (HDR) and from the World Bank's education statistics database.

5 The four EQUIP2 Associate Awards are: Malawi: Education Sector Policy, Planning, EMIS Support Activities and Higher Education Strategic Plan Development; Malawi: Education Decentralization Support Activity; Uganda: Strengthening of the Uganda Education Management Information System; Zambia: Support to the Ministry of Education Strategic Plan in improving Information and Strengthening Policy Implementation

Analyses carried out

A summary of the interviews was prepared for each EQUIP2 Associate Award. This summary listed what each individual had to say on each of the main interview topics and looked for commonalities as well as differences in responses across interviews. With this information, plus information available from the related documents, a summary was prepared for each Associate Award (Annex 1). In addition, a list was prepared of what worked and challenges across Associate Awards (Annex 1). This information served as the basis for Section II (Findings, Lessons Learned, and Insights).

C. HIGHLIGHTS OF EQUIP2 ASSOCIATE AWARD EXPERIENCES

Each of the four EQUIP2 Associate Awards is summarized on the following pages. Longer reviews of each Associate Award may be found in Annex 1.

UGANDA: Strengthening of the Uganda Education Management Information System

Funding: $999,243, increased to $1,506,390
Time frame: 2003–2005
Purpose: Conduct a school mapping exercise (GIS); institutionalize the EMIS, increase the level of training for EMIS; create a twice-yearly primary school mini-census; complete a Wide Area Network (WAN) using cellular techniques, and coordinate and supervise a long-term education Strategic Investment Plan.

The USAID/Uganda two-year (2003–2005) $1,506,390 Strengthening of the Uganda Education Management Information System EQUIP2 Associate Award was a follow on to two prior EMIS support programs: EMIS 1 (1991–2001) financed by the World Bank and EMIS 2 (2001–2003) financed by DFID. All three programs were implemented by AED in collaboration with Africon, a consulting firm providing multi-disciplinary, professional services in engineering, infrastructure-related development, and management based out of South Africa.

The Associate Award was designed in the context of a Fast Track Initiative (FTI), focusing on strengthening the quality of primary education in Uganda. USAID/Uganda anticipated that more data would be needed to guide what the FTI would look like and to guide meeting conditions for donor tranche releases. Funding for this activity was not available in the USAID/Uganda education budget. It was obtained competitively in 2003 and 2004, in limited amounts, from USAID/Washington to support Fast Track Initiatives.

The AED home office Project Director provided technical assistance from a distance and through periodic visits to Uganda. Africon, with an office in Kampala, provided day-to-day technical assistance, training, and oversight through qualified Ugandan experts hired for the project and a highly qualified technical advisor based in South Africa who periodically visited Uganda. MOE personnel carried out all data gathering, both for the EMIS and for establishing the GIS.

Key outcomes included:

- Completion of a school mapping exercise (GIS)
- Intensive trainings in Uganda, South Africa, and the United States for MOE technical personnel in running and maintaining the GIS and in EMIS software application
- Training for policymakers, technical support personnel, district education officers, and other district officers in the use of EMIS, GIS, and basic calculation skills related to education indicators
- Training for the Statistics Section in developing methodology and procedures for collecting data on a quarterly basis on full and half-day attendance
- GLOBAL ED*ASSIST extended to calculate survival rates and primary completion rates
- EMIS data linked to the Primary Leaving Examination (PLE) results for 2004
- The WAN concept completed and a report prepared for the MOES outlining an approach to linking the head office and all district offices along with options and pricing

Outstanding challenges included: the conditions were not met for GIS sustainability—EMIS staff would get trained and then they would leave the MOE; it was not possible to fully decentralize the EMIS; there was insufficient time to ensure the paper-based scanning equipment and systems for capturing attendance data were operational. More critically, during the period 2006 to 2009, the quality of data collected by the EMIS gradually deteriorated, response levels went down, and annual statistical reports stopped becoming available on a timely basis. USAID subsequently moved to re assist the MOE to recover its performance in the EMIS area starting in 2010.

MALAWI: Education Sector Policy, Planning, EMIS Support Activities, and Higher Education Strategic Plan Development

Funding: $1,985,620, increased to $2,704,581
Time frame: 2003–2008
Purpose: Improve strategic planning and management for Policy Investment Framework (PIF) implementation, strengthen education management information systems, and develop strategic business plans for the University of Malawi and Mzuzu University

The USAID/Malawi five-year (2003–2008) $2,704,581 Education Sector Policy, Planning, EMIS Support Activities and Higher Education Strategic Plan Development EQUIP2 Associate Award was designed with three components: Improved Strategic Planning and Management for PIF Implementation (Component 1), Strengthened Education Management Information Systems (Component 2), and Development of Strategic Business Plans for the University of Malawi and Mzuzu University (Component 3).

Component 3 was completed in May 2004 and Component 1 prematurely ended in April 2005, due to a significant reduction of USAID funding to the EQUIP2 program in Malawi. EQUIP2 continued to support the MOE on Component 2, strengthening EMIS, through 2008.

When USAID decided in 2003 to support Malawi's EMIS, the MOE had an installed EMIS with computers, software, and a skeleton EMIS staff who had received some training, having received ongoing EMIS support from donors since the early 1990s. However, there was limited credibility in the accuracy/validity of the data the EMIS generated and donors were collecting their own data to track project progress. The EMIS portion of EQUIP2 resulted in a number of outcomes, including:

- By 2008, EMIS had become the only official and authorized education data source for all Malawi.
- By 2008, the EMIS coverage rate for primary schools exceeded 98.5% each year.
- Education statistics for 2005, 2006, and 2007 were released in November of 2005, 2006, and 2007 respectively.
- The main EMIS office at the MOE had been refurbished with new servers, workstations, and a local area network.
- EMIS software and data sets were installed on almost every computer in the MOE and its offices could produce reports according to individual office needs.
- EMIS data had been published in booklet format for quick reference and digital copies were available in PDF format.
- Numerous trainings had been organized and delivered to the PEAs (primary education advisors) and other MOE officials. Intensive training had also been organized for district staff.
- 24 of 33 district-level EMIS offices were directly involved in data collection, entry, and production.

Outstanding challenges included: high levels of MOE senior staff turnover and among EMIS staff; limitations in qualified staff to properly support the EMIS without external technical assistance; limited senior MOE staff use of the reports the EMIS generated for policy dialogue, analysis, and management of schools; inability of the MOE to finance the day-to-day operations of the EMIS; limited capacity of district staff to take on the demands of the EMIS activities.

MALAWI: Education Decentralization Support Activity (EDSA)

Funding: $11,559,643
Time frame: 2009–2012
Purpose: Strengthen the decentralization implementation at the Ministry of Education headquarters, district and school levels to support system progress in attaining National Education Sector Plan 2008-2018 goals

USAID/Malawi's three-year (2009–2012) $11,559,643 Education Decentralization Support Activity (EDSA) EQUIP2 Associate Award was designed in the context of a National Decentralization Policy (NDP) to improve social services through decentralization passed by parliament in December 1998.

A 2008 USAID/Malawi-supported education assessment concluded that decentralization is primarily administrative and the devolution of power remains largely rhetoric. The center continues to play a significant role in setting policies and carrying out routine functions. The assessment also noted that the crucial responsibilities of management, finance, and curriculum at the regional, community, and school levels continue to be defined by the central MOE.

EDSA is designed to provide assistance at three levels: (1) strengthen policy and strategy articulation, interpretation, and implementation (policy support); (2) improve decentralization implementation, planning, and data utilization for informed decision making (decentralization and planning); (3) enhance the role and participation of communities in monitoring education service delivery (schools and community).

USAID/Malawi opted to cease support for EMIS activities centrally, instead concentrating resources, under decentralization and planning, on developing EMIS capacities at the district and school levels. EDSA is working in 6 of Malawi's 33 districts. A few donors, such as UNICEF, have provided some support to the EMIS activity after USAID ended its major involvement at the central level.

Key EMIS outcomes as of October 2010 include having run a trial of a School Assessment Chart in rural and urban districts. The chart provides information on key indicators for a school, comparing it on these indicators to other schools in the district and national data and within the school over time. A Decision Support Tool has also been designed to support districts in reviewing progress on key indicators among the schools within a district and comparing these data with national data on the same indicators. Annex 1 contains some sample outcomes.

Outstanding challenges: An emerging EMIS challenge is that it is not clear how the central EMIS will fare with limited external assistance. Delays in producing the MOE's annual statistical report since external support ceased in 2008 are beginning to have negative repercussions on the ability to generate School Assessment Charts and Decision Making Tools with timely national level data. Once the chart and the tool are ready to be shared with districts and schools, a key challenge will be to ensure that they will be used. The continuing challenge is to refocus the government leadership on key performance indicators.

ZAMBIA: Strengthening Policy Implementation

The USAID/Zambia seven-year (2004–2011) $26,473,991 Support to the Ministry of Education Strategic Plan in Improving Information and Strengthening Policy Implementation is a follow on to a program funded by USAID/Zambia from 2001–2003, through a contract with AED to strengthen the MOE's EMIS. A fraction of project funding was used for EMIS, given that the project financed a number of components.

Funding: $13,973,991 increased to $26,473,991
Time frame: 2004–2011
Purpose: Improve information for efficient resource management and strengthen education policy implementation.

Designed to take a demand-driven approach that supports what the MOE needs to implement its Strategic Plan, EQUIP2 began with three components: policy support, decentralization, and EMIS. Over time, and as increased funding became available and additional MOE needs were identified, the Associate Award grew to 11 components.

The highest priorities for the MOE under EMIS have been to: (1) institutionalize the EMIS to promote demand for policy-relevant data so that the analysis of these data will be used to enhance decision making; (2) develop the Ministry's capacity to sustain the system with no or only minimal outside assistance; (3) extend the EMIS's reach to make it useful as a management and planning tool; and (4) increase the system's use by planners and decision makers.

Key EMIS outcomes as of October 2010 when the project was drawing to a close, include:

- Since 2003 this year's data has been produced this year, response levels have increased to 99%, and the quality of the EMIS data is less questionable.
- The MOE now invests its own money in paying the Internet bill, procures its new computers, and replaces old ones with its own budget.
- The district education offices, instead of the provincial education office, captured the 2010 Annual Statistical Complication; initial indications are that data were more accurate and comprehensive.
- Capacity building has become more demand-driven as Ministry staff at different levels ask for particular kinds of training.
- A set of tools has been developed to collect data monthly, per term, and annually.
- The EMIS is being integrated with the Payroll and Establishment Control System so that teachers and schools funded by the MOE can be identified and crosschecked.
- Donors, NGOs, and other civil society units are increasingly accessing the EMIS to obtain information for their own planning/program implementation.
- Increasingly, Head Office personnel are owning the system. Districts, long ignored, are pleased to be an increased focus for attention and resources.
- The EMIS has been used to monitor MOE performance in achieving Performance Action Framework goals; to bring up the worst student–teacher ratios in rural schools; to follow teacher attrition to examine conditions, incentives, and policies needed to retain teachers in underserved areas.

Outstanding challenges: Sustainability—a major objective of the Associate Award—remains a challenge. It is hard to keep the level of needed technical skills in Ministry personnel as qualified staff move on. The MOE has limited control over who it can hire. There has been rapid turnover in Planning Directors. A continuing challenge is accessing and outsourcing changes in technology.

Findings and Lessons Learned

The lessons learned included in the first part of this section were derived from findings from the four Associate Award experiences, each of which worked with incipient or emerging EMIS systems. The second part of this section presents two additional lessons learned that address challenges that USAID education officers may face in designing programs to support Ministries of Education that require more sophisticated data from their EMIS for decision making.

A. LESSONS LEARNED FROM THE EQUIP2 ASSOCIATE AWARDS

Eight lessons learned emerged from the review of the four EQUIP2 Associate Awards that focus on EMIS. Some are specific to programs that focus on EMIS support and strengthening. Some have broader application for programs designed with other objectives. The latter are included in this review because, regardless of whether or not they are specific to EMIS projects, considering them in designing and implementing an EMIS program is considered fundamental to achieving program success.

1. ***With adequate external assistance Ministries of Education with incipient EMIS systems can generate Annual School Census reports and good response rates within two to three years. However, in the absence of ongoing external support (particularly in countries that have not reached a certain stage of resources maturity – human, technology, processes) and strong political will linked to a commitment to measure progress, these results can slip.***

This year's data this year

An important objective of a Ministry of Education EMIS is to collect data from schools and make it widely available to those who need it the same year that the data were collected, often through an Annual School Census

report. This is referred to as "this year's data this year." The Annual School Census has traditionally served as the principal repository of data on schools, students, and teachers used by MOEs, donors, and others to track progress in providing access to education for a country's school-age population.

With a comprehensive program of technical assistance (design, software, implementation help, skills and use training, and field support), extensive staff training at multiple levels, and AED and Africon computer support from under a prior World Bank project, the Ugandan Ministry of Education and Sports was able to produce the Annual School Census in October of 2001, the same year that the data were collected, two years after the initiation of external assistance. This pattern was followed over the next five years through 2006 with ongoing external assistance from AED and Africon financed by DFID and then USAID/Uganda under EQUIP2.

With a program of technical assistance and extensive staff training provided by USAID under the EQUIP2 EMIS, the Malawian Ministry of Education was able to release in November of the same year the education statistics that were collected in 2005, 2006, and 2007.

Under a prior USAID-funded TA and training contract with AED (2001–2004) the Zambian MOE was able to start generating this year's data this year starting in 2003. With continued support under EQUIP2, the Zambian MOE was able to continue providing timely Annual School Census reports through 2008.

Producing these timely reports requires valid format and a strategy for applying it at the school level to fill in the needed information. Staffs from headquarters or from district education offices need to be identified and trained to collect the data from schools. In some instances extensive logistical support is required to enable data collectors (Ministry officials such as district education officers) to get out to the schools to collect data. In some instances, local or international NGOs have assisted with data gathering and analysis. Initially, outside TA and support are needed to ensure that all are carried out in a systematic and timely fashion. External funding is often required to mobilize government staff to go out to the schools, or to facilitate school headmasters to come to district locations in a timely fashion.

However, in all three countries, once external support ceased, there were delays in issuing the Annual School Census on time. In Uganda, these delays began almost immediately after the cessation of USAID assistance in 2005. In Malawi, when USAID support for the central EMIS came to an end in mid 2008, the 2008 and 2009 annual school census reports were

not issued until the following calendar year. In 2009, when USAID/Zambia and EQUIP2 took the conscious decision to let Ministry of Education staff start collecting data and produce the annual school census without external oversight, publication of the report slipped into the next calendar year. This slippage occurred despite analyses that pointed to time critical steps for releasing MOE funds for data capture, issuing travel approvals and provisions for travel, and for provision of personnel to perform data capture. Other funding emergencies or unexpected demands on MOE funds tended to "overcome" funding for one or more of these time critical steps.

Response rates

Key to the credibility of data collected and their potential use is the response rate, i.e., the percentage of schools that provide data for the Annual School Census. Donors are usually concerned with ensuring that the response rate from schools is as high as possible.

With external assistance from USAID/Malawi under EQUIP2 coverage rates for primary schools in Malawi exceeded 98.5% by 2008. In Zambia, again with outside TA under EQUIP2, response rates in 2010 for primary school reached 99%.

In Uganda, and with TA from AED and Africon under a prior World Bank project, response rates in 2000 were 94% for primary education and 88% for secondary education. By the end of the second EMIS project supported by DFID, response rates had increased to 98% and 95%, respectively, for government-run primary and secondary schools. However, maintaining these high response rates can be a challenge in the absence of external assistance. After USAID EMIS support ended in 2005 response rates slipped significantly. By 2008, secondary response rates had slipped to 64.1% and primary response rates to 83.4%. Indications are that direct funding for facilitation and rapid movement of funds to the districts during data collection reduced the ability to keep the response rate high.

Implications for USAID education officers
When designing support for an incipient EMIS effort it is possible in two to three years to show concrete results in producing "this year's data this year" along with good response rates. However, it is critical that sufficient financial and technical resources are available to support the effort long term. Without continued resources and effort (either by the MOE and/or donors or other strategic actors), these gains can quickly erode, unless the Ministry and key stakeholders make it clear how critical such accurate data are for funding, results, and holding government accountable.

2. ***Achieving data quality begins at the school level and takes more time, attention, and funding than one might expect.***

Data quality, a factor key for credibility, begins at the school level, so a "culture of accuracy" should be instilled. All three EQUIP2 Associate Awards spent considerable time and financial incentives to ensure that headmasters understood the use, importance, and relevance of the annual EMIS exercises. Many were sensitized to the use of these data at the central level to allocate per capita funding. After the first year of operation, every school received a questionnaire packet with a one-page summary of the prior year's results. In Malawi and Zambia, this was later expanded to include a comparison of the school with other district and national schools. Finally, in Uganda, and after one year in Zambia, a sample verification exercise was conducted. Approximately 5% of schools were sampled to match questionnaire responses with base school records. This additional verification reminded headmasters of the importance of the census, and identified some fraudulent responses (in the Uganda's case, per capita allocations to some schools were based on reported enrollment figures).

All of these steps required additional funds. Periodically, these funds were not available (most recently in Uganda and Malawi) or other more pressing matters diverted MOE money originally budgeted for these purposes. In almost all instances, verification needed to be combined with other Ministry-sponsored activity to fully justify taking an extra verification step.

Implications for USAID education officers
Support for ensuring the quality of the data collected from schools and the perception that these data are of high quality are key for credibility and need to be an important part of any EMIS donor support. USAID should consider support to ensure that headmasters who are responsible for making school level data available understand the use, importance, and relevance of the annual EMIS exercises. In addition USAID should consider providing TA and training to relevant EMIS staff to develop the capacity to carry out data verification and assist these staff with initial exercises. As part of the project design process, USAID should take concrete steps to persuade MOEs to build in a yearly EMIS budget line item for funding data verification.

3. ***EMIS support should extend to the district and school levels. However, EMIS support at more local levels should not be at the expense of the central Ministry EMIS.***

As countries in Africa and elsewhere begin decentralizing their services, there has been a rationale and demand for providing EMIS support at district and school levels. As USAID and other donors have found, having information capacity locally shortens the time between gathering and using information. In addition, District staff experience less turnover. Those who create and use information own and understand the data, and demand increases for EMIS data for local planning. As decentralization becomes more widespread, schools and districts will seek out increased information daily and weekly.

However, from the EQUIP2 cases it is also clear that the center should not be ignored. Donors, MOE and other ministry decision makers, and other stakeholders (civil society, NGOs) continue to need timely and credible data to track trends in national indicators over time and permit comparisons between regions. In addition, to compare their performance with national and regional trends, districts and schools will always need access to timely and accurate national EMIS data. Lastly, only the national EMIS system can create a common vocabulary and set of standards that assists all levels below it to develop their vocabulary and standards.

Under the Malawi EQUIP2, Associate Award 24 of 33 district EMIS offices were directly involved in data collection, entry, and production for preparing the Annual School Census. Under the EQUIP2 follow-on, EDSA is working in six districts in two provinces. An important focus is assisting district education offices and schools to generate and use data for decision making.

As of October 2010 in Malawi, a School Assessment Chart had been developed and a trial run carried out in rural and urban districts. A valuable input to schools for preparing their School Improvement Plans, the chart provides information on key school indicators for comparing the school to other schools on the district and national data as well as within the school over time. A Decision Support Tool has also been designed to support districts in reviewing progress on key indicators among the schools and within a given district as well as comparing these data with national data on the same indicators.

In line with a long-term EMIS goal, EQUIP2 in Zambia assisted in ensuring that the 2010 Annual Statistical Compilation were captured by district education boards instead of the provincial education offices. Initial indications were that these data were more accurate and comprehensive and that there was a more pronounced sense of local ownership of the data. In addition, a set of tools has been developed to enable district education boards to collect data at the school level monthly, per term, and annually. As in Malawi, district profiles and school profiles will also be produced. The Lusaka

Province has been selected to run a pilot. According to an EQUIP2 quarterly report, from the first meeting of the pilot it was "clear that this new system induces schools to use information to make decisions."

Tom Lent, AED home office director for the Zambia Associate Award, reflects on the value of not just focusing on working at the central level but also supporting activities at the level of the provinces, districts, and schools:

We found that our work at the centralized ministry level would only have limited, trickle down impact if we did not try to identify and work with the potential dynamism of provinces, districts, and head teachers. We started supporting provincial education officers and district officials in their convening of stakeholders and putting the issues of low test scores, low performance, and school quality on the agenda of schools and education leaders, the private sector, NGOs, and civil society. Good provincial leadership was successful in raising awareness and indignation around poor school quality, and getting people to commit to a new standard and goals. Also, we try not to treat education problems as though they only have education solutions. What works and why is fundamentally a development issue, and is similar to what we have learned in development over the decades about agency, reform, engagement of communities and stakeholders, access to quality information, not losing focus on children and understanding their context and realities.

Although there are strong reasons to provide support in provinces and schools, there are risks in doing this at the expense of ensuring that central EMIS activities remain stable. In Malawi, now that USAID is no longer supporting the national EMIS but focusing just at the district level, capacity at the national level is limited. One manifestation of this weakness in capacity is that the publications of the 2008 and 2009 Annual School Census have been delayed. For the districts EDSA is working in, this has resulted in difficulties in obtaining national data for carrying out comparisons as part of the district Decision Support Tool.

Implications for USAID education officers

In designing an EMIS program that supports the sub-national levels, examine the needs of the EMIS system in its entirety. Is support provided by USAID being delivered that both strengthens data gathering and use at the school, district, and provincial levels and contributes to utilizing these data for decision-making? Is the central EMIS communicating with district and provincial EMIS and are these data being used at the center for decision making as well? Does the center have the capacity, without external assistance, to continue generating timely, credible data that are being used for decision-making?

4. ***The challenge of an EMIS is finding ways to ensure that "hard data" generated are actually factored into decision-making, particularly for the central Ministry.***

Factual, objective, structured information is actually a small component of most important decisions. Decision makers, as Peter Drucker eloquently pointed out in 1982, always begin with opinions. The role of most scientific or factual information is to either support or, most often, disagree with prevailing opinion. Traditional EMIS often are not designed to "debunk" opinions. They are usually oriented to routine, scientifically defined measures. To convert data into information and ultimately knowledge requires human interpretation, understanding, and presentation. The skills to interpret and present well can be taught, and are increasingly being addressed by medium-term courses. But these skills need to be planned for as part of a "medium-term" human resources conversion.

A frequent error has been to assume that data will be sought out and used for decision-making. EQUIP2 experience has shown that EMIS data are more apt to be used when one or more project components need EMIS data for decision-making. A conscious effort is made, often with advisors embedded in MOEs, to generate data and analyses to address key problems. An alternative is for EMIS projects to build in steps to ensure that MOE staffs learn how to use the data for decision-making.

In Uganda the MOE, with assistance of EQUIP2 advisors, used the EMIS and GIS data to allocate capitation grants, to determine teacher allocations according to a formula, for textbook allocation, and to reallocate teachers. Thanks to the school mapping exercise, for the first time, a lay person could understand the data: red schools were seen as bad in terms of student/teacher ratios or other input indicators, and green schools were seen as good. See Annex 1 for some samples of just such presentations.

In Zambia, where EMIS was one of several EQUIP2 components, ample use has been made of data generated for MOE decision making as well as for NGOs and civil society. EQUIP2 technical advisors supported both the EMIS and the other components. Stakeholders, within and outside the MOE, now identify the figures and information they need from the EMIS, and how they want it packaged. EMIS data have been used to monitor MOE performance and effectiveness in achieving goals through the nationally agreed-upon Performance Action Framework.

In teacher recruitment, EQUIP2 in Zambia created a model that looked at EMIS data available on every school, including teachers and pupils, and

based on these data calculated the total number of teachers that should be hired. Based on factual and tested information, EQUIP2 advisors were able to show how to bring the worst student–teacher ratios down to 75/1, identify which schools should be targeted, and how many teachers for each district would be needed to bring the ratio to a uniform standard. This has been widely accepted both within the MOE and within the Ministry of Planning—which still uses a five-year plan approach to adjust government spending and improvement targets.

A central focus of EDSA in Malawi is to facilitate a process whereby MOE staff at the district and school level generate and then utilize local EMIS data for decision making. Charles Matemba, EDSA EMIS advisor, reflects on both the importance of ensuring that data are used for decision-making and the challenges faced:

EMIS data utilization can be looked functionally at least at two levels: at the central level and at the district and sub district levels including the school. Given that information needs as you move from the school to National level are not exactly the same, there is a need for the system to factor that in order to meet the core needs at each level and hence increase utilization. Processed data products such as charts (districts charts, zone charts, school charts, time series analyses, school comparisons etc) need to be available at these levels in modes that render them both relevant and easy to use for stakeholder at each respective level.

If the products were made available, a culture of data use and associated skills will need strengthening. The challenges include literacy, particularly at community level in rural schools and at district level; inevitable political elements in the Local Councils. Proactiveness will be important for education managers and civil society to champion data utilization culture through understanding and utilizing leverages and opportunities within the system in order for the sector to make progress. The use of the processed EMIS data from the point of generation (at the school) besides improving management also leads to improved data quality as data providers will appreciate the value or use of quality data better.

Implications for USAID education officers

In working with host country counterparts, invest in appropriate training and knowledge development for those who interpret information and make it available to senior managers for use in taking important decisions. Training should include preparing "just-in-time" briefs, eye-catching reports and presentation of data, and other strategic communication methods. Design EMIS programs so that project-supported EMIS technical advisors guide their counterparts to use EMIS data for decision-making.[6]

6 Interestingly, the increased focus on quality education, and the focus on numerical measures of it,

5. ***Fundamental for EMIS success is a comprehensive and ongoing capacity building program for Ministry of Education staff at multiple levels that factors in the inevitable staff turnover, and ensures that existing staff acquire new skills as new requirements emerge.***

In a given Ministry of Education EMIS technical staff and data input personnel are usually located in the Planning Directorate. Also located in the Planning Directorate are the individuals responsible for analyzing data generated by the EMIS system and generating reports incorporating these analyses to be used at more senior levels for policy and other decisions. The Director of Planning typically plays an important leadership role in ensuring that resources are available to collect quality EMIS data on a timely basis; that analysts are generating the needed analyses; and in ensuring that these analyses reach senior Ministry of Education personnel and individuals in other Ministry of Education and other units on a timely basis for decision making. In an EMIS project it is important to build into the design provisions to ensure that these individuals acquire the skills needed to operate and utilize the data generated by the EMIS system.

All four EQUIP2 Associate Awards have included a hefty training or capacity building component; not just for EMIS and related staff, but also for other MOE staff to ensure that they had the capacity to generate timely data. Training for other staff focused on honing their skills in analyzing the data and in using these analyses for decision-making.

EQUIP2 Uganda built in funding and time for an extensive staff-training program. MOES staff received two intensive trainings in using school maps for education policy decisions. Key technical MOES personnel were given on-the-job training in map maintenance and manipulation. Select personnel from the MOES head office and certain district personnel received additional training to use maps for more detailed analysis. Three members of the Education Planning Division of the MOES were sent for two weeks training in South Africa to learn the school map software required to run and maintain the system. Nine members of the MOE received extensive training in the United States in EMIS software application and maintenance. MOE policymakers and technical support personnel were trained in parallel on similar but separate skills in training lasting two to three weeks. Finally, district education officers and three persons from each district education office received three days of training in the use of EMIS, school maps, and

bode well for a much more intense use of factual information and the systems that support it. In the U.S., the "No Child Left Behind" act has dramatically increased the need for student-centered information, and has challenged more traditional approaches to averaging general numbers. Many school information systems, and District summaries, have improved dramatically as a result.

basic calculation skills related to education indicators. Three years later, at least half of these people remained in their posts. Five years later, in 5 to 10 districts, the original ED*ASSIST software package was still operating and being used to produce "planning style" reports. These trainings were instrumental in providing these individuals with the skills to operate the EMIS system. The subsequent support in selected districts more firmly embedded "evidence-based" decision making into the local education culture.

In Malawi, EQUIP2 organized and delivered numerous trainings for primary education advisors and other officials from the MOE. District staff also received intensive training. Training activities focused primarily on developing MOE staff capacity to use the GLOBAL ED*ASSIST program. Data processing training workshops were introduced in 2004 and continued successfully over the next three years. In addition, data utilization workshops geared towards divisional, district, and zonal heads took place at the end of each Annual School Census. EQUIP2 also organized numerous trainings for all school heads where they were oriented in how to complete the census questionnaire. Trainings for district education staff focused on data collection and using datasets for education purposes. During the trainings, CDs and booklets were given to the participants explaining how to use the data provided through practical examples. By 2008, most district managers were regular users of EMIS data and the demand for the data had purportedly greatly increased.

Before the EQUIP2 Zambia began in 2004, capacity building in EMIS was fragmented. Ministry of Education staff received a great deal of training but it was supply driven and not linked to an overall program strategy. By 2010, with the assistance of EQUIP2 technical advisors, capacity building had become more demand driven. Planners, for example, requested training in M&E and district statistical officers requested technically specific EMIS training. Some of this training was keyed to analyses of allocations to districts, and to other initiatives, such as textbook distribution, headmaster management training, and an increasing demand from the head office for fact-based analysis of special requests. Recently in Zambia, the creation of "power user" EMIS groups has been encouraged, as well as "online, built-in" HELP screens that can provide simple assistance from the computer directly without face-to-face training. However, technology mediated assistance remains in its early stages.

In spite of all the training provided, the EQUIP2 Chiefs of Party and EMIS technical staff acknowledged that the training was not sufficient. Even by designing training to take into account MOE staff turnover, turnover continued during the projects and afterwards. In Uganda, after six years of

external support only one of three EMIS technical positions were still filled by 2009 when USAID/Uganda resumed assistance for the EMIS. In Malawi in 2008, when USAID assistance for the central EMIS ended, only one qualified EMIS specialist remained in the MOE headquarters. In Zambia, seven senior people either left the EMIS operations over a six-year period or were transferred to other areas because of their technical skills. In addition, there were four Planning Directors in six years.

Kurt Moses, AED Vice President and a senior EMIS specialist with experience supporting EMIS systems in over 40 countries, observes:

If you think the amount of training needed is X, you should budget for 3X. Internal inefficiencies, turnover of personnel, the basic selection process for people who get "training and funding" all mitigate against easy and efficient training. Additionally, we attempt to build capacity in entire units—not just individuals—since a "critical mass" of trained personnel, working together, builds more enduring capacity. Ultimately, what you are seeking to engender is "competence" among EMIS personnel and units. Competence is a combination of skills, knowledge, and motivation—that is what is needed to sustain EMIS.

Marisol Perez, USAID/Malawi education team leader who designed and oversaw the first year-and-a-half of EDSA's implementation would like to see the traditional focus on "training" expanded to "capacity building."

*We are looking at capacity building not just as training (on Excel, GLOBAL ED*ASSIST). Training is a first step. We are also looking at capacity transfer, and addressing critical questions such as, "how do you know what capacity you are building when you don't have an inventory of where people are, so you know you are building their knowledge and skills?" You can conduct training on content, but you need to accompany the people trained, sit there with them, and go through the process with them. You need to mentor them, coach them, helping them network and seek out relevant resources. You need to ask yourself who your end user is. Usually it is not just one person. What about the department and/or the unit?*

Implications for USAID education officers

When designing an EMIS project, build in sufficient funding and support for training staff and capacity building at all levels, including building training-of-trainer capabilities to account for the inevitable staff turnover and training in new technologies. Look for creative, user-friendly, and lower cost ways of making training available. Some examples include the use of "power user" EMIS groups and HELP screens. Where possible, build in a mechanism for evaluating the skills acquired by the individuals receiving training, as opposed

to just keeping track of number of individuals trained on different topics. Finally, look for ways to encourage MOEs to build sufficient funding into their recurrent budgets for ongoing training at all levels in EMIS operations and the use of information supplied by EMIS systems in decision-making.

6. Having the information required to establish realistic targets and to track progress in reaching these targets in a donor-supported program creates strong incentives for USAID and other donors to support the establishment and/or strengthening of EMIS systems.

Donors often serve as the impetus for establishing or strengthening EMIS systems since they need a mechanism to track progress in achieving the project targets. Often donors establish high-stakes targets that must be met before issuing additional tranches of funding. These high-stakes outcomes can create strong incentives for MOEs to "adjust" EMIS results in favor of a Ministry. Donor-encouraged EMIS should include verification exercises as well as transparent processes so that accuracy is not an issue. More frequent measurement of key performance indicators is useful so that education systems have some "warning" regarding their performance before a high-stakes outcome.

In Uganda, one motive for designing the EQUIP2 EMIS project was that donors were collaborating with the MOE under the Fast Track Initiative (FTI) to develop a comprehensive primary education support program. The USAID/Uganda education team leader had limited education funds to support the FTI. However, USAID/Uganda did have access to a small amount of education funds available from USAID/Washington to support FTI. The education team leader had the foresight to see that a valuable contribution of USAID/Uganda to the FTI would be a small project to strengthen the MOE's EMIS to assist the Ministry and donors to establish FTI targets and track achievement once FTI funding became available.

His prediction was correct. Donors used the MOE's EMIS to identify underperforming districts and then to target assistance to them under the FTI. Donors used education data generated by the EMIS to track progress in meeting conditionality under the FTI. When it became apparent that agreed-upon EMIS FTI targets were not being met, donors threatened to stop funding until the MOE could show what actions it was planning to take to address these missed targets.

Malawi has been a key example of very productive donor coordination and as a result improvement in the overall information environment. During the 1990s, donors had become discouraged about their lack of success in assisting

the MOE to establish a credible EMIS. By the early 2000s each donor had established its own system for collecting data to track progress on aspects of education that they were supporting. Assistance from USAID/Malawi under EQUIP2 to strengthen the MOE's EMIS, has made it possible to rejuvenate donor support for a central EMIS. As of 2008 most donors were using the central EMIS system to track progress under their projects instead of relying on their own separate data tracking systems. A key lesson has been starting by establishing a "unified" vision, followed by timely delivery of a very usable product.

In Zambia data from the EMIS is being used in monitoring the effectiveness of the MOE in achieving goals established under the nationally agreed upon Performance Action Framework (PAF). EQUIP2 advisors have trained MOE staff to track student–teacher ratios, a major performance indicator under the PAF, to identify how many teachers should be assigned to districts and schools and to what location. When donors found out these data were not being followed or used by the Ministry to assign teachers and thus failed in its performance under this indicator, donors put on increased pressure to meet performance targets. In 2007, data from the EMIS showed that net enrollments for girls were below targets established under the PAF. With donor pressure, the MOE tripled the number of bursaries for girls in grades 8 and 9 and was able to increase female enrollments by 20,000.

Kurt Moses reflects on the incentive that significant donor funding provided for strengthening Uganda's MOES EMIS:

Uganda was a fascinating example of donor coordination. You can't underestimate the importance of EMIS especially where donors have a huge stake/investment in Ministry of Education operations—at one time donors were supporting up to 70% of all operating expenditures. In the case of Uganda, where other donor-supported the Fast Track Initiative, the Ministry of Education and Sports respected the relationship between the money they received from the donors and the targets they had to achieve. These targets were measured through the annual EMIS data collections.

Implications for USAID education officers

Having the information required to establish realistic targets, and to track progress in reaching these targets in a donor-supported program, creates strong incentives for USAID and other donors to support the establishment and/or strengthening of EMIS systems. In designing a program to support EMIS capabilities, USAID and/or other donors should collaborate with MOE to establish frequent measurements of key performance indicators so that education systems have some warning regarding their performance

before a high-stakes outcome affects a donor decision to withhold funding when an MOE has not met agreed-upon targets.

7. ***Sustainability approaches require ongoing effort and need to be a part of projects from the very early stages.***

As with any investment, EMIS requires both capital and operating funds—capital funds to enhance software, replace aging equipment, and retrain staff; and operating monies to ensure that gathering, processing, editing, and dissemination of information throughout the system continues on a regular basis. Some governments understand information's importance—but many still do not. Few countries have, as yet, reliably committed the 3-5% of their annual budget that a solid, sustainable EMIS requires. Countries that have include South Africa, for a time; Namibia; and several Central American countries.

Malawi EQUIP2 covered all financial expenditures in support of EMIS activities. When EQUIP2 ended in 2008, the MOE could not finance the continuation of the EMIS. With key staff turnover, only one person with the required technical skills was left in the EMIS unit to run the EMIS, leaving serious doubts regarding prospects for sustainability.

In Uganda achieving sustainability of EMIS operations was a key focus of EQUIP2 and its predecessor funded by DFID. Following the end of EQUIP2 support, there was a marked slippage in the EMIS operations and capacity. Data integrity problems persisted and the timeliness for annual data releases worsened dramatically. Over the same period, the Statistics Section in the MOE had also become vulnerable: in 2009 only one of three statistician positions were filled. Computers procured in 2003 were still being used in 2010 and were becoming obsolete without additional capital investment. At the District level, monies to facilitate certain operations, such as the District operations in support of the collection operations, had disappeared. Districts have been forced to find ways to "piggyback" the collection operations on other activities – and the result has been a contributing factor to the slower data collection and lower response rates. When in 2010 USAID/Uganda again assumed support for the EMIS, aside from District commitment and remainders of trained personnel, it was a bit like starting again to build a timely and credible EMIS system.

In Zambia prospects for achieving sustainability of EMIS and related operations are brighter. EQUIP2 initially funded the procurement of computers for the central Zambia Ministry, provinces, and districts and

paid the Internet bill. By 2010 the MOE was investing its own money in paying the Internet bill. The MOE was procuring new computers and replacing old ones. To strengthen the sense of ownership and responsibility of the MOE, in 2009 EQUIP2 reduced its input in the day-to-day running of the GLOBAL ED*ASSIST system. Although this resulted in some delay in the production of the Education Statistical Bulletin, it has showed what steps the Ministry must take to ensure EMIS sustainability. This includes reorganizing the MOE and formalizing performance targets to ensure that a specific unit is dedicated to deliver timely information. The process has started with the revision of the MOE headquarters, provincial education offices, and district education board offices strategic plans and organization structures to make the new EMIS sustainable. In the last year of the project, Internet-based enhancements to the EMIS system have been made to better serve districts, and to speed the data exchange cycle using faster electronic methods. An encouraging outcome has been the demand from the President's Office and Cabinet for fact-based updates of the Five year Plan, as well as the introduction of systematic measurements of activity at the District level. These, too, have driven sustaining the capacity to generate and use information. However, even with the above, there are questions about what will happen, vis a vis sustainability, when USAID funding under the EQUIP2 Associate Award for EMIS technical assistance comes to an end.

The second part of sustainability is high level including parliamentary, commitment to more "fact based" decision-making, which will, generally, lead to enhanced accountability for elected leaders—whose performance is being measured. Facts alone, in any political situation, are not sufficient to move policy in a generally better direction. However, they are "necessary" to create a base for both transparency and enhanced rationality.

Kurt Moses, AED home office EMIS specialist, reflects on ways MOEs can ensure sustainability of EMIS operations in the face of staff turnover:

You need to view EMIS as a three to five year technical commitment – and a longer commitment for changing the internal culture. Another ten years would not be unheard of. It needs to be placed, institutionally, with a person who exercises leadership, and who is being held accountable for implementation—this is, usually, the Planning Director. A key issue with EMIS is that you train specialists in the Ministry of Education, provide them good technical and analytical skills, give them certifications and respected (world caliber) training, and then they leave for better paying jobs elsewhere—usually in the private sector, but sometimes directly with donors or NGOs. A possible way around this is to identify both effective career paths for such people within the government but, as well, finding secondary level math or science teachers, in mid-career, who have shown dedication to education and "second" them for EMIS and analytical jobs. Then, rotate them through the Ministry of

Education head office for two to three years. The key to personnel sustainability is to think of them as a capital investment—which needs continuous support and nurturing--not as an "assumed capacity" or as a recurrent expense.

Sri Perrera, Zambia EQUIP2 EMIS advisor reflects on achieving sustainability from a systems and processes perspective:

In my last year my focus to improve sustainability was to simplify systems and processes as much as possible. We tried to set up an environment that strived for continuous improvement but simplified systems. For example, by expanding the number of predefined reports we made information more accessible to all users. Our goal was to reduce the dependency on scarce skills.... By simplifying some of the data cleaning and data management tasks, we made district level data management and ownership possible.

Tom Lent, AED home office Project Director for the Zambia EQUIP2 project reflects on sustainability through the lens of "accompaniment" and "graduation."

The key challenge regarding the best role of projects and the proper role of outside foreign technical assistance is much more complex and interesting than "have we worked ourselves out of a job?" Ministries almost everywhere have been and will be in need of technical assistance in key strategic and technical areas. The challenge is "accompaniment" and "graduation."… Mostly, we try to be interactive, and appreciate where the MOE is, where it wants to go, and how to get there. We start at one level of need, and then as the MOE becomes more competent and moves on to other, more complex issues and needs, and their technical needs change and are more complex, we try to graduate to that next level of TA as well.

Implications for USAID education officers

Sustainability approaches need to be a part of projects from the very early stages: comprehensive staff development and capacity building programs, creative approaches to addressing human resource issues (including inevitable staff turnover), and changes in policies and procedures as appropriate. Good information models with early products and outputs help establish the goals of an effective EMIS. When senior management requires, understands, and uses information generated others see that the information is of importance to the operation of the education system. Sustainability requires that MOEs include funding in their budgets to cover recurrent costs of EMIS hardware, software, operations, and ongoing training.

A valuable role for USAID may be to build into projects assisting Ministries of Education to work with Ministries of Finance to build recurrent costs for running EMIS systems into annual MOE budget submissions, along with funds for "block grants" to Districts or Provinces as part of decentralization programs. In several countries, such as Nicaragua and Guatemala, routine recurrent funds have been "ring-fenced" to ensure that every year EMIS and information efforts receive regular funding. Under decentralization, municipal agencies, provinces or districts will all be at different levels of both understanding and commitment. Ensuring "ring-fenced" funds for information and reporting purposes will become increasingly powerful as a means of ensuring sustainability. Additionally, sensitization campaigns that remind citizens of the information they are entitled to (a traditional role of newspapers) becomes increasingly important. Quality education is not only highly dependent upon supply factors (schools, teachers, supplies) but on demand factors where parents and families demand a good education and provide what a child needs (nutrition, support, space for study, and school supplies).

8. ***New technologies and increasingly sophisticated demands on EMIS systems will periodically require technical expertise that may not be available within the government or from local contractors.***

As users of EMIS systems become increasingly "savvy" they tend to make new demands on the EMIS system. In addition, as new EMIS technologies become available, possibilities emerge for new applications of the EMIS systems that had not been available previously. This, in turn, often requires new programs; new data collection methodologies; and possibly new hardware -- all of which require technical expertise that may not be available within a given country and very often not within a Ministry of Education.

A study carried out in Uganda in early 2010, after 10 years of external support, identified a number of new EMIS support needs. Among the needs identified were the acquisition of emerging technologies that have the potential to dramatically alter the way in which data are collected and reported back, and to dramatically improve the timeliness of data availability. The report indicated that the Uganda EMIS paradigm needs to be changed from one based on the annual collection of data via the School Census to one where data is "collected when needed" using new technologies such as Cell Phone SMS, Smart Phones with ODK style capacity, tablets or netbooks. This will achieve dramatic improvements in speed of data availability and reductions in cost. However, since the capability doesn't exist in country, external assistance will be required to achieve this paradigm shift.

In Zambia, per a recent EQUIP2 report: "A challenge for the future will be for the designers of the EMIS data system to be 2-3 years ahead of the process and to be able to predict issues, the research agenda, and gaps in knowledge and information. The Ministry of Education needs to be anticipating the kinds of problems and issues that policy people and other stakeholders will be addressing now that there is an institutional cultural shift in 'policy seeking data' and data informing policy." It is doubtful, even with progress made by the Zambian Ministry of Education in institutionalizing its EMIS system, that it will be able to accomplish the above without external assistance.

Implications for USAID education officers

When designing an education program that has an EMIS component, determine whether the existing EMIS system has the capacity to generate and process increasingly sophisticated demands for information. If it is determined that it doesn't, and if this information is critical for broader project tracking/monitoring, build in assistance (technical, software, staff support, other) required to meet these needs. In addition, look for ways to build in mechanisms for assisting the MOE and decentralized units to identify financial resources and the technical expertise that it will require to address future needs for increasingly sophisticated information and new data technologies. Missions should consider empowering the local private sector to provide more specialized expertise—for example, in Central America, some private contractors are now providing continuing support to Ministries for certain elements of their EMIS systems. By rebidding contracts for this support at least every three years, it is possible to create a more "level" competitive field, and encourage healthy competition. This means, however, that Ministry personnel need to become better "technical managers" rather than just generalist or even technicians.

B. LESSONS LEARNED FROM BROADER EXPERIENCE

9. ***Increasingly, political and policy leaders rely on Key Performance Indicators (such as student–teacher ratios, percent of students reading at grade level) to make policy decisions. EMIS systems need to be prepared to assist in channeling questions in a way immediately relevant to their needs.***

EMIS often lags behind changing policy initiatives. To make responses from EMIS more popular as an adjunct to policy studies and policy statements, Key Performance Indicators (KPIs) have gotten much wider use. KPIs are calculations based on EMIS data such as student–teacher ratio, student–classroom ratios, percent of students reading at grade level. The view that more donors and governments take is that: "…if it cannot be measured,

then we cannot be sure about real results." Accordingly, Key Performance Indicators now become the first things examined, rather than detailed tables generated from annual education statistics or summary graphs of enrollment.

Experience has shown that it takes approximately three years before policymakers and the public understands the strengths, weaknesses, and meaning of a KPI. Even a simple indicator, such as pupil–teacher ratio is often subject to debate. For example, does it include just full-time teachers? Part-time teachers? Volunteers or adult "aides"? Government teachers? When KPIs drive funding decisions (such as capitation, or compliance with an objective, or a portion of an entitlement formula) the effects of such an indicator and the ways it can be "gamed" become crucial elements of understanding information.

It takes some customizing of KPIs to be sure that they properly measure the policy and objectives to which they are attributed. For example, in certain countries with a large alternative or adult education program, some KPIs are altered by the different ratios and teaching approaches used in these programs as opposed to more traditional K–12 programs. In more advanced countries, teacher-related KPIs may be altered by "fully or partially mediated" instruction, where electronic lessons play a larger role in delivering content.

Implications for USAID education officers
In designing EMIS programs, be aware of the kinds of information that policymakers need to make decisions, including being able to track Key Performance Indicators over time and build in the support relevant MOE staff will need to provide timely and credible information, packaged so that policymakers can use it. In many cases, this will go beyond providing what has traditionally been support for collecting and reporting timely basic education statistics.

10. ***The requirement to provide "quality education" means additional, important demands on EMIS and the allocation of more and more consistent resources for information.***

Following the early EFA focus on access for all children to education, which remains a challenge for between a quarter and a third of all EFA countries, the UN has amended the statement to now state "access to quality education."Worldwide, this has created a host of experiments on defining "quality education," followed by making this term operational and ensuring stakeholder understanding of what a quality education means.

Quality education has a wide variety of definitions. The most common definition typically revolves around literacy and numeracy, and then other subject areas, and then critical thinking, learning in a team or group, and abstract thinking. Many of the higher order objectives have been difficult to implement, and it has become clearer that "systems do not educate students…." Teachers and schools educate students. Systems can only set standards and support the conditions for learning Traditional EMIS in emerging countries tends to measure access and efficiency, but is less well developed to measure quality and the components that contribute directly to quality of education in schools.

Several information approaches to addressing quality education have become popular, and are being worked out in various national settings. One approach is based on National Testing Systems, which uses existing testing and examinations used to "screen" for the most qualified children for secondary or tertiary education based on available places. Several EMIS efforts have attempted to link known data on schools, and their inputs, to national testing results. This has worked when the national testing/examinations units work well with the MOE. However, in a number of countries national testing/examinations groups guard their "independence," making it difficult to integrate information they generate with EMIS information by student, across schools, and districts. One of the rationales for guarding this information is that national testing/examinations units have an absolute demand for security, consistency, and annual timeliness. Otherwise, anxious parents and students create major political problems.

A second approach now emerging is the use of Opportunities to Learn (OTL) theory that categorizes at least eight factors necessary for effective and quality learning. Among these factors are: attendance (both students and teachers), time on task (reading or writing), adequate materials, and emphasis on reading. The major focus of most current systems using an OTL approach is on attendance for both student and teacher. Other OTL factors that have been captured include hours of school operation, presence of textbooks at appropriate ratios, and encouragement of reading through self-reporting.

However, in some instances, these efforts are resulting in massive paperwork—too much to be processed by districts, let alone the national level. Some countries are moving to electronic recovery via cell phone and other electronic means, which provide possible cost savings. The newer Uganda EMIS effort is one example, although the cost savings are yet to be realized. The key for most OTL factors is that, since they are school based, school authorities must be able to do something about changing OTL factors.

Newer EMIS efforts in countries such as Liberia, Senegal, and Equatorial Guinea are beginning to adjust to the more detailed demands of OTL approaches, as well as accommodating information that is timelier—not just once per year, but on a term or even monthly basis. The focus on quality in education is demanding more detail and more frequency in monitoring and attending to conditions for good schooling.

Implications for USAID education officers

In designing EMIS support, examine whether key decision makers (MOE, other ministries, USAID, other donors) are going to need data, available on a sequential basis, to assess changes in education quality. If the answer is yes, explore options (including the implications for cost, level of effort, and time to generate the data) for assisting MOEs to generate data that make it possible to assess changes in education quality over time. One option includes linking EMIS databases with national performance testing databases. Another option is to identify OTL indicators and set up a means of collecting and interpreting data on these indicators on an ongoing basis through the EMIS.

Emerging technologies and approaches

The following technologies or approaches already hold great promise for developing country EMIS—they all tend to both democratize, and provide information faster and in more useable formats.

A. CELL PHONES

Cell phone use has increased exponentially in the developing world. There are now more cell phones in use in 2nd and 3rd world nations than in the entire "developed" world. Cell phones already reach more schools than computers have or will in the next five years—and will form an essential part of any future EMIS. Cell phones are already used to log school locations and to communicate key information such as "attendance or enrollment data" to District or national offices rapidly. They are typically more "sustainable" because people want them for multiple reasons—but mainly because they allow for relatively cheap communication. Cell phones can also provide a relatively low cost option for communicating between users and suppliers of key school necessities.

B. TABLET COMPUTERS

Tablet computers, and, to some extent "netbooks," hold the promise of both lower cost and highly portable and adaptable instruments to place more information into more stakeholders hands than ever before. Tablets lend themselves to classroom observation and easy presentation of graphics. They can be used with minimal training and they lower the cost of moving educational information to the school and classroom level. They also support Regional and National levels need to be informed.

C. GOOGLE EARTH AND DIGITAL MAPPING

This extremely powerful geographic presentation application, now available on almost any computing device, allows a rapid presentation of the "status" of any social sector, but particularly education for very low cost. Virtually

any digital data (photos, facts, video) can be linked to its geographic locus—and allow even modestly trained personnel to understand the significance of allocating resources. It also provides, through highly visual means the opportunity to plot progress. Annex 1 includes several examples of "digital mapping" already successfully in use.

D. PLANNING SIMULATION AND BUSINESS INTELLIGENCE

Simulation/projection has been a "staple" of five-year plans for many years. The dramatic increase in the power of EXCEL spreadsheets (which now incorporate many advanced features) and other tools allows EMIS systems to routinely accommodate forward planning. Hence, while current, managerially oriented information remains at the heart of an EMIS, the ability to quickly translate accurate "base information" into projected future outcomes is increasingly important. Several examples of both EXCEL based projection approaches that are highly graphical are provided in Annex 1. Moreover, the use of Business Intelligence software (which can "assemble" data from a variety of sources—both digital and manual) can dramatically increase the speed and ease of use of information. Tools such as Business Objects, Hyperion, or advanced SAS, have all proved effective in this regard. One element of these programs is the ability to not only provide graphs and charts, but to create "dashboards" which dynamically indicate progress or decline according to established targets. This information can, in turn, be communicated either to Web sites, or sent to cell phones with "smart" capacity.

However, these more sophisticated tools only make sense if they continue to answer quickly and accurately (which is dependent upon solid information from schools and teachers) the questions that policymakers or stakeholders are asking.

E. OPEN SOURCE SOFTWARE

Developed as an alternative to proprietary software driven by specific commercial interests (and often requiring both high licensing and maintenance fees), "open source software" has become more widespread and increasingly present in many educational applications. A number of NGO lead efforts have made use of "open source" free software to create special applications. Many university and pre-university programs now train personnel in "open source" approaches. Many EMIS systems will likely become a mixture of both "open source" and proprietary software for the near-term future—open source often requires more training for the user, whereas many proprietary systems often require a large commitment

and more funds "up front" in exchange for organized training and certain performance guarantees. The key is to provide points within EMIS technology where different applications can be accessed or exported so that alternatives are available over time. Examples of some recent, generally "open source" software approaches include: Android, Linux, Java, and a massive variety of open source applications available on the Web.

F. ACCESS TO THE WORLD WIDE WEB

Increased access to the Internet is the wave of the future—every nation, with rare exception, aspires to access to the information and economic benefits that the Internet provides. While it clearly has transformative effects on the culture, not all of which can be predicted, the Web is a powerful adjunct to better education systems—both administratively and academically. Its introduction in a formal system of education needs to be calibrated to enhance and not undo positive practices. The Web can dramatically increase the ability to be responsive to education need and shortages—if linked to appropriate political and administrative units. Accordingly every future EMIS system needs to plan for and incorporate it as countries increase access to the Web.

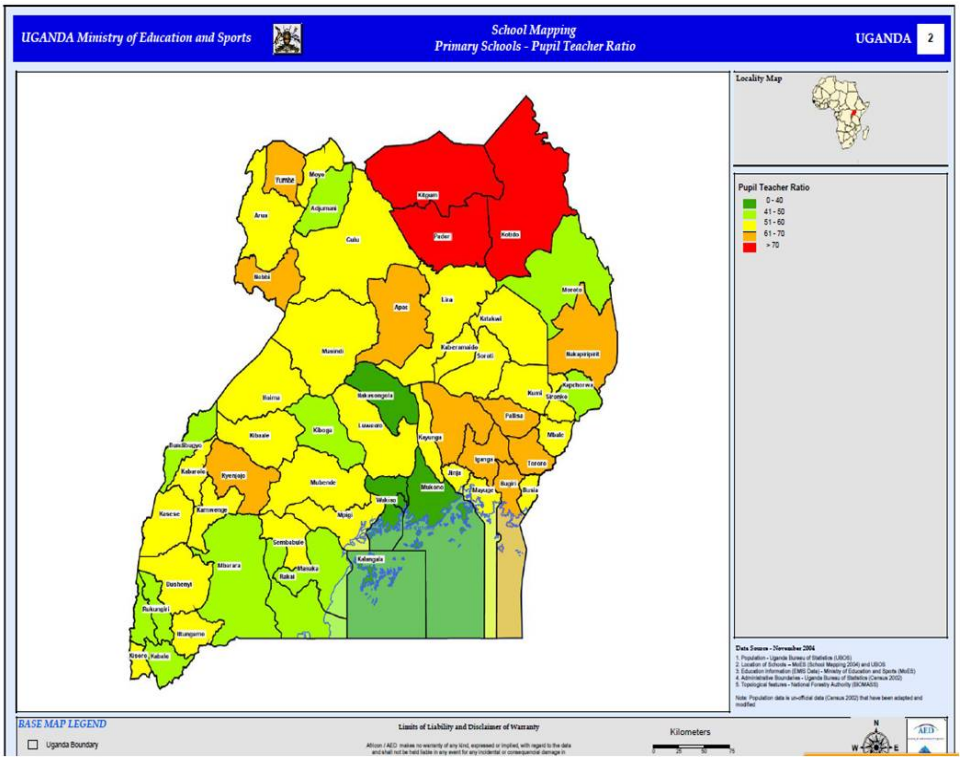
The next ten years will see more technological and political progress capable of improving education than has occurred in the last ten years. This progress can empower students, teachers, parents and schools to be more competent than ever before. The EMIS challenge is to adapt to a much more decentralized, democratic and self-empowered education system whose demands for quality will drive the next wave of education for all.

Annex 1: sample EMIS outputs - historical & future

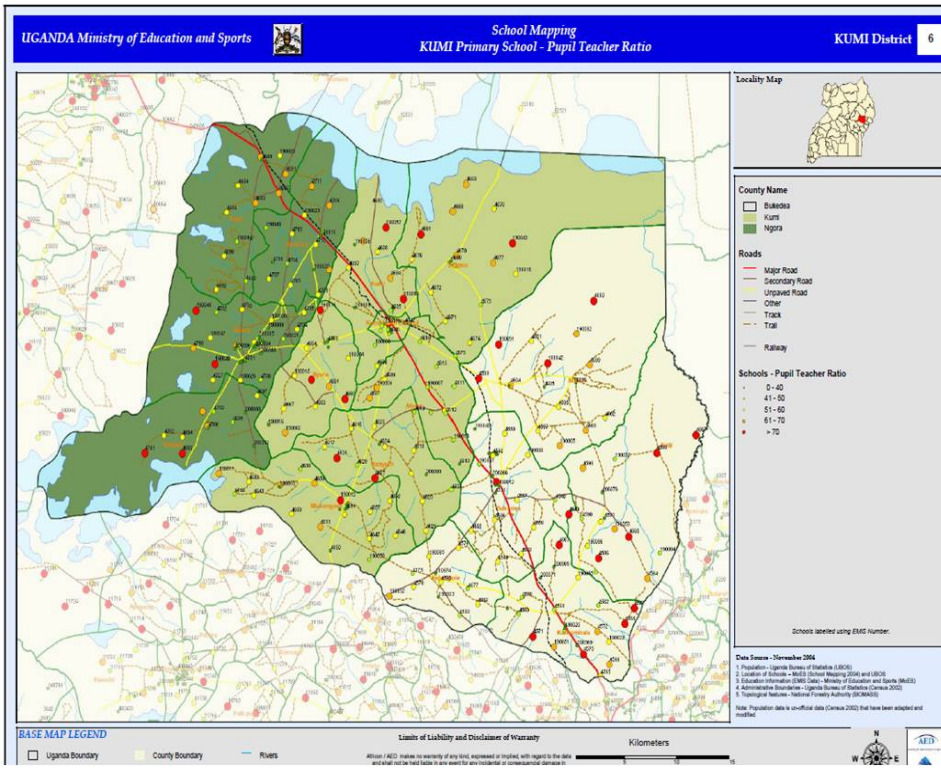
UGANDA

Showed in map format, both "thematic" and via "point" mapping, is the status of schools and Districts according to "key performance indicators (KPIs)", in this case Pupil/Teacher Ratio:

Thematic Mapping:



Point Mapping by School:



Specialized School Listing with Summary Statistics:

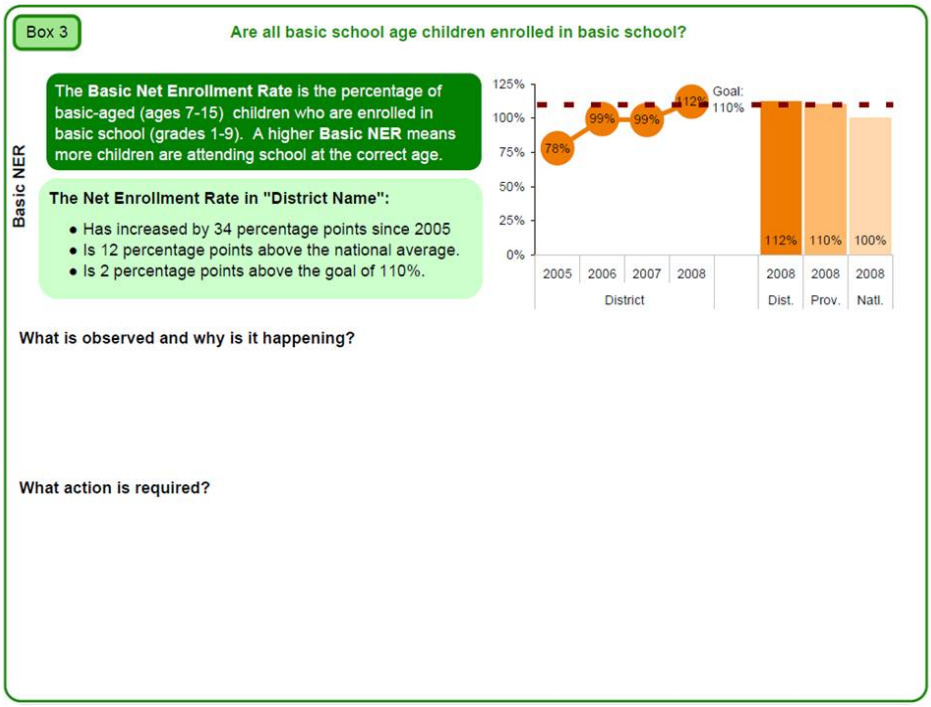
School List - Kumi

Number of Schools

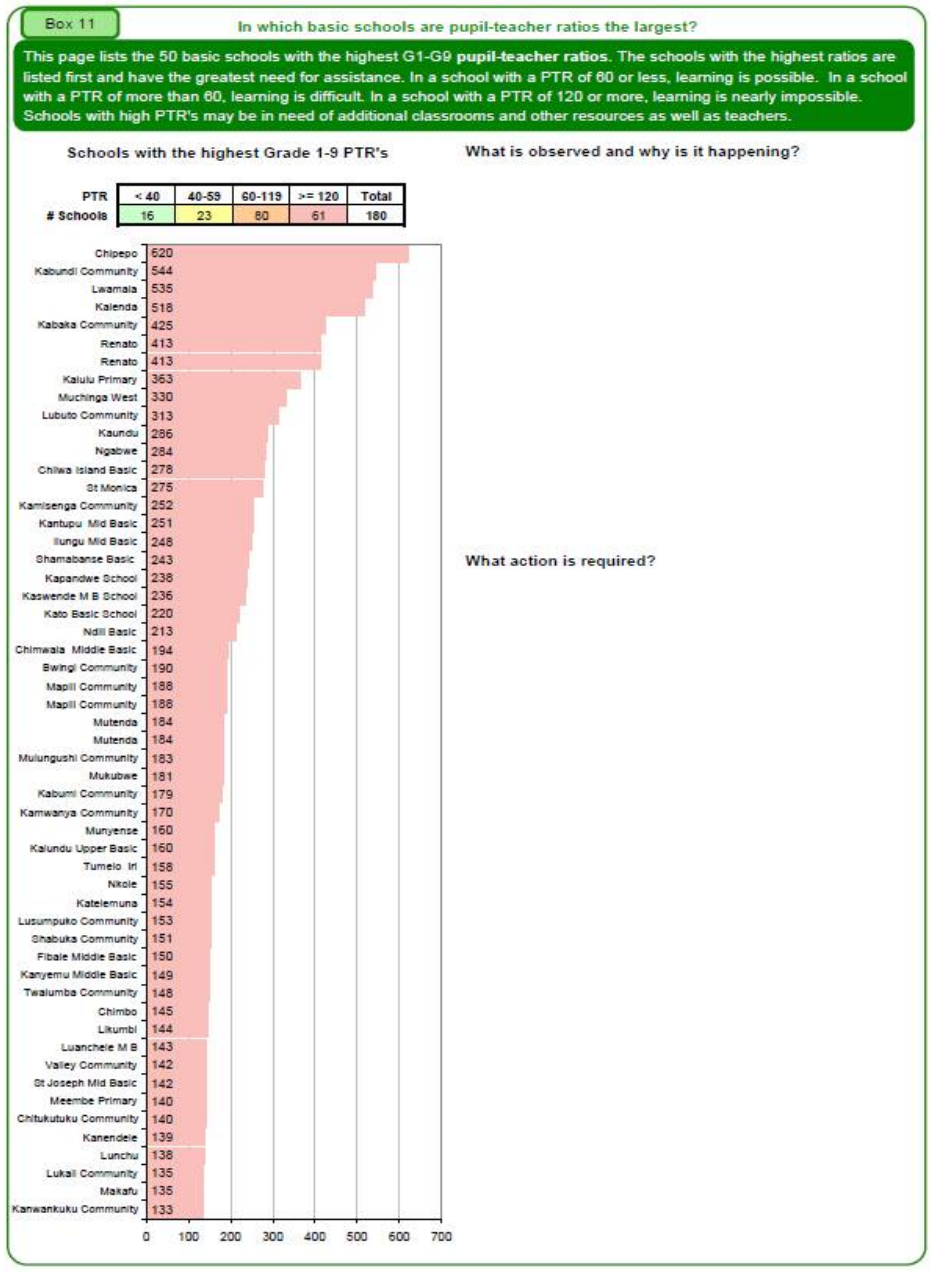
EMIS Number	School Name	On EMIS Register	County	Sub County	Parish	Nr of Students	Nr of Teacher	Nr of Classrooms	PTR	PCR
4561	Kocheka P.S.	☑	Bukedea	Bukedea	Kocheka	534	10	7	53	76
4562	Aligoi P.S.	☑	Bukedea	Kachumbala	Aligoi	768	17	7	45	110
4563	Mukongoro Kotia P.S.	☑	Bukedea	Kachumbala	Aligoi	800	10	8	80	100
4564	Kotia P.S.	☑	Bukedea	Kachumbala	Aligoi	535	6	7	89	76
4565	Amus P.S.	☑	Bukedea	Kachumbala	Amus	589	10	8	59	74
4566	Amus Sapir P.S.	☑	Bukedea	Kachumbala	Amus	615	10	6	62	102
4567	Kapaang P.S.	☑	Bukedea	Kachumbala	Kachumbala	601	8	8	75	75
4568	Kachumbala P.S.	☑	Bukedea	Kachumbala	Kachumbala	924	20	15	46	62
4569	Kawo New P.S.	☑	Bukedea	Kachumbala	Kawo	477	10	3	48	159
4570	Kawo P.S.	☑	Bukedea	Kachumbala	Komuge	788	16	12	49	66
4571	Komuge P.S.	☑	Bukedea	Kachumbala	Komuge	715	10	7	72	102
4572	Komelekes P.S.	☑	Bukedea	Kachumbala	Kongunga	675	11	8	61	84
4573	Kongunga P.S.	☑	Bukedea	Kachumbala	Kongunga	1024	21	11	49	93
4575	Akwarikwar P.S.	☑	Bukedea	Kachumbala	Kwarikwar	709	9	7	79	101
4576	Chodong P.S.	☑	Bukedea	Kidongole	Chodong	721	13	8	55	90
4577	Kawo Kidongole P.S.	☑	Bukedea	Kidongole	Chodong	588	13	8	45	74
4578	Kajamaka P.S.	☑	Bukedea	Kidongole	Kajamaka	678	12	14	56	48

ZAMBIA

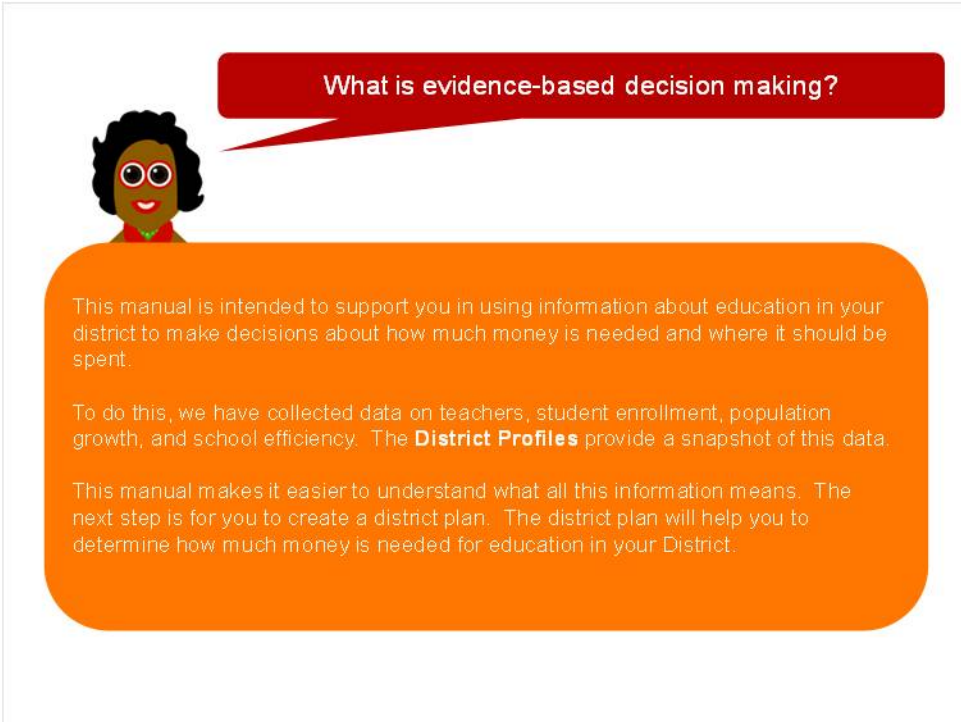
While Zambia had a full database and complete reporting package, the use of District comparative statistics proved very useful and informative. Note the "heuristic" questions that can serve as points of policy and action improvement.

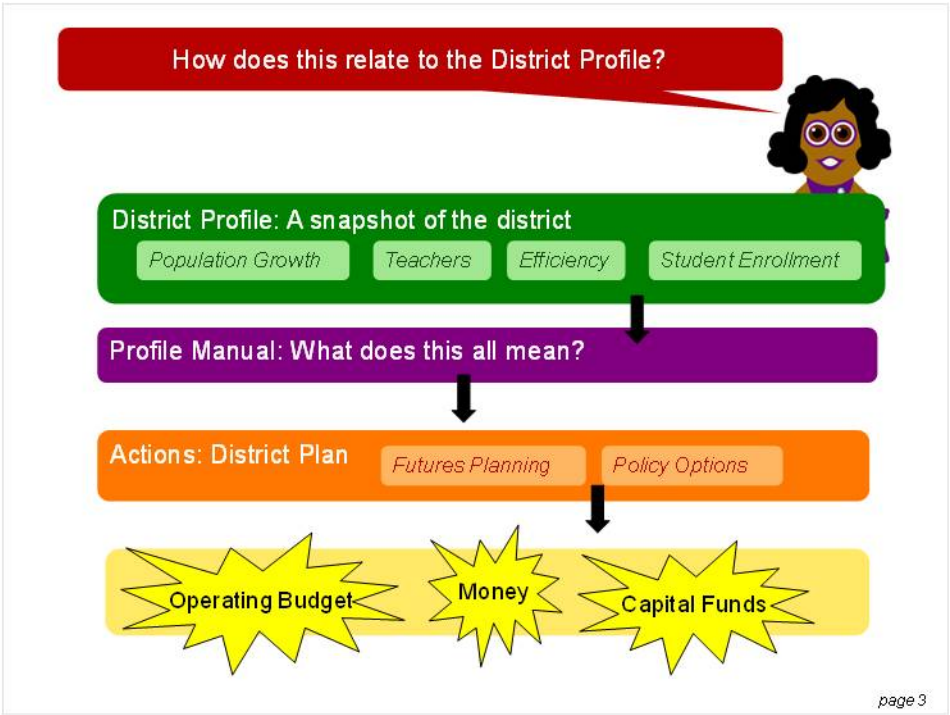


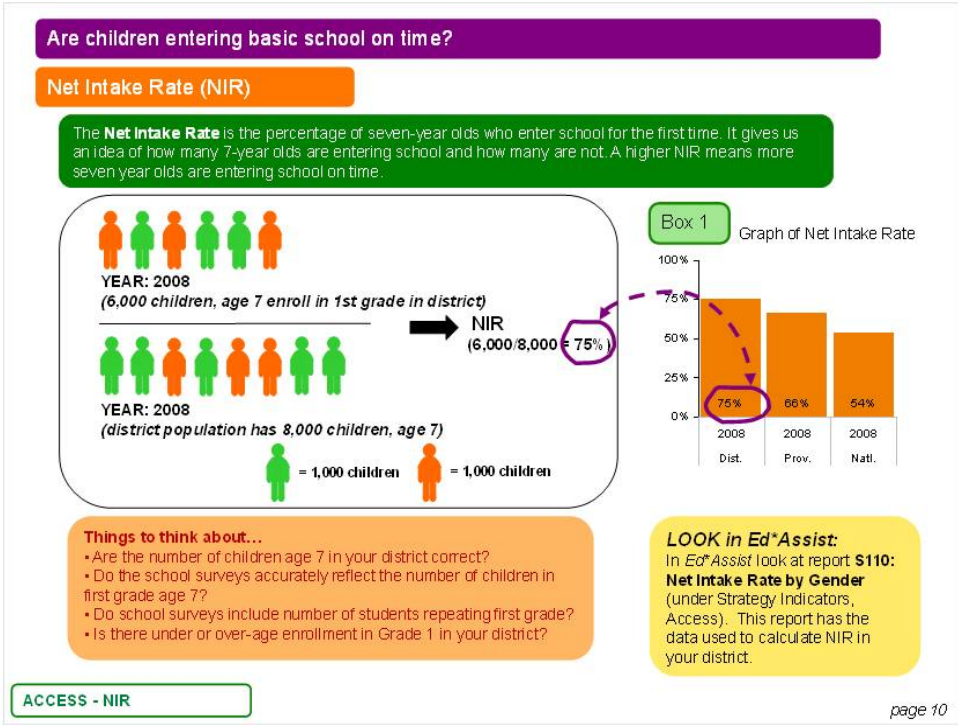
Ranking of Schools by Pupil/Teacher Ratio was key in determining need at the District Level:



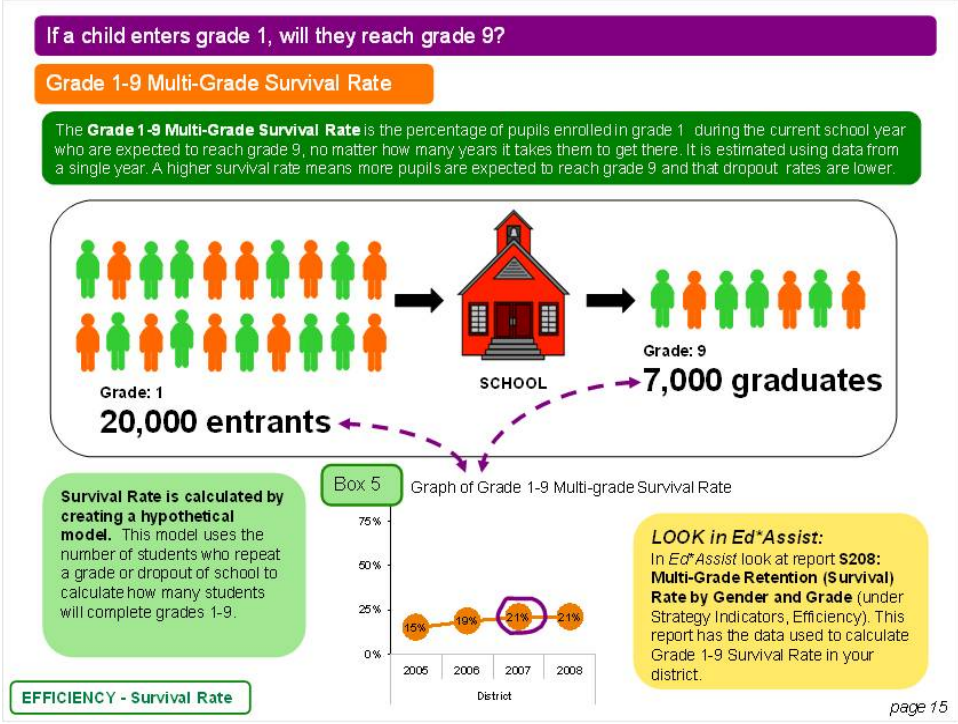
A manual was created to explain key concepts and organize access to various reports:







Conveying KEY outcomes is critical to reminding stakeholders what is at stake for children.



School Report Card with comparative District, Province, and National figures for comparison:

REPUBLIC OF ZAMBIA
MINISTRY OF EDUCATION

School Name
BOMBWE

EMIS No.
368

Province: CENTRAL
District: CHIBOMBO
Constituency: Chisamba
Ward: Muswishi
Postal address:
BOX 60246

Running Agency: GRZ
Founding Agency: Community
Level: Upper (Grades 1 - 9)
School Head: SYAKUMBILA MISHECK
School Gender Status: Co-educational

Telephone: 0
Dist to DEO: 38
Gender: 1
Type: Regular School
Data Source: Responded

Rural/Urban: Rural Area
Grd 1 Appl M: 26
Grd 1 Appl F: 20

03-Jan-06

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	Total
Classes	1	2	2	1	1	1	1	1	1	0	0	0	11
Male Enrolment	26	31	42	23	24	19	26	24	24	0	0	0	239
Female Enrolment	19	48	38	20	26	28	24	21	20	0	0	0	244
Total Enrolment	45	79	80	43	50	47	50	45	44	0	0	0	483
APU Enrolment								0	0	0	0	0	0
Physically Impaired	0	0	1	0	1	1	1	0	1	0	0	0	5
Repeaters	1	0	0	0	0	5	6	0	6	0	0	0	18
Dropouts (prev. yr.)	0	0	0	0	0	0	0	3	0	0	0	0	3
Preg. (prev. yr.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Preg. Readmissions	0	0	0	0	0	0	0	0	0	0	0	0	0
Deaths (in prev. yr.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Orphans	16	4	20	3	2	2	2	3	7	0	0	0	59
NonZambians	0	0	0	0	0	0	0	0	24	0	0	0	0

Teachers: M: 4 F: 3 T: 7
Structures: Temporary: 0 Permanent: 12
Libraries and Classrooms: Libraries: 0 Classrooms: 5
Inspections in Past 2 Yrs: 2 Rooms/Classes: 0.45455

Teachers/Classes: 0.63636
Male/Female: 0.97951
Phys. Impairment Ratio: 0.01035
Repetition Ratio: 0.03727

☑ CSMC
☑ SHN
☐ INSPRO
☐ IRI
☐ Pre-school

Pupil/Teacher Ratio

Grade Range	1-12	1-9	1-4	5-7	8-9	10-12
BOMBWE	69	69	94	56	51	0
CHIBOMBODistrict	64	67	95	48	43	18
CENTRALProvince	52	56	84	41	32	20
Zambia	50	54	80	38	33	22

Pupil/Class Ratio

Grade Range	1-12	1-4	5-7	8-9	10-12
BOMBWE	44	41	49	45	
CHIBOMBODistrict	44	45	43	46	35
CENTRALProvince	41	43	39	41	42
Zambia	40	42	38	40	37

Dropout Rates

	Male		Female		Total	
Grade Range	1-7	8-12	1-7	8-12	1-7	8-12
BOMBWE	0.0%	0.0%	0.0%	7.3%	0.0%	3.4%
CHIBOMBODistrict	1.9%	4.0%	2.6%	4.0%	2.2%	2.5%
CENTRALProvince	1.9%	2.1%	2.5%	4.6%	2.2%	3.3%
Zambia	2.0%	2.4%	2.7%	5.3%	2.4%	3.7%

Book Pupil Ratio

BOMBWE	1.8
CHIBOMBODistrict	13.8
CENTRALProvince	8.0
Zambia	6.3

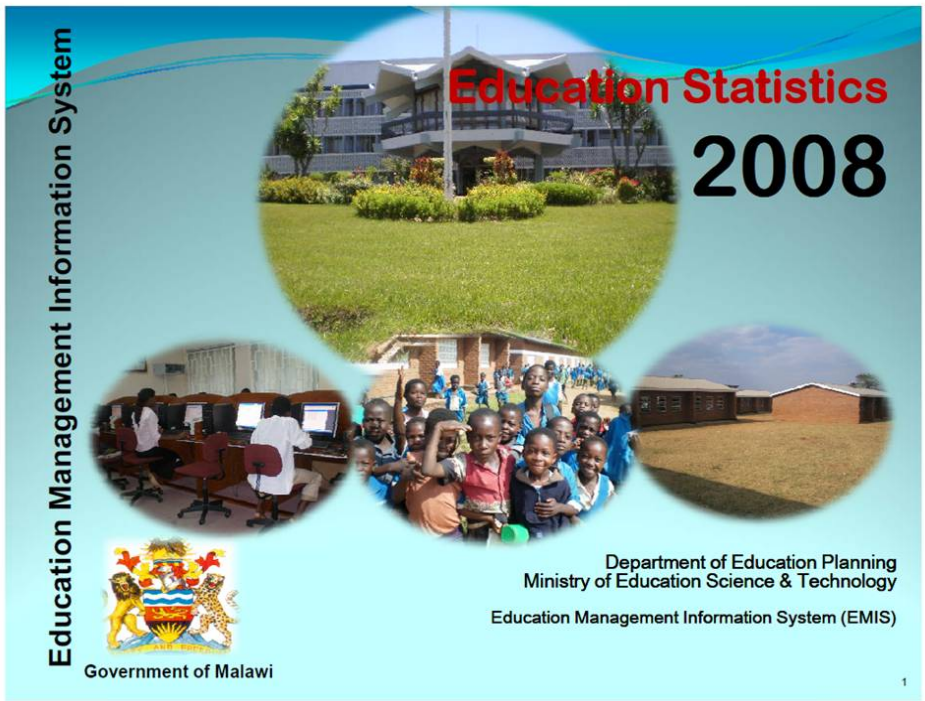
% Orphans

	Male	Female	Total
BOMBWE	16.1%	15.5%	15.8%
CHIBOMBODistrict	28.6%	30.6%	29.7%
CENTRALProvince	29.3%	30.4%	29.9%
Zambia	28.1%	30.0%	29.0%

RED VALUES = Possible Incomplete or Missing Information, Please pay careful attention to these values when completing the 2006 ASC.
Orange VALUES = Values which are unusually high or low. Refer to attached information sheet or discuss value with District Education Office.

MALAWI

Malawi focused primarily on consolidating various separate data collection exercises, and on creating a unified presentation. Considerable effort went into creating the annual statistical yearbook—which would be both highly accurate and comparative. Data were available in November of the same year they were collected and available in hard copy and disk format to all Districts and Schools.



Year	Primary	Secondary	MCDE	TTC	Tech./Voc	University
1999	2,896,280	75,959	166,781	9,401	1,305	3,527
2000	3,016,972	46396	118,063	8,548	1,472	3,977
2001	3,187,835	57,635	118,617	13,252	1,352	3,654
2002	3,164,191	45,989	93,767	12, 522	1,689	4,565
2003	3,112,513	54492	76, 258	12,129	1,756	4, 745
2004	3,166,786	180,157				6,478
2005	3,200,646	183,854		2,813		6,835
2006	3,280,714	218,310		2,807		6,346
2007	3,306,926	210,325		3,954		6,458
2008	3,600,771	233,573		3,794	1,388	

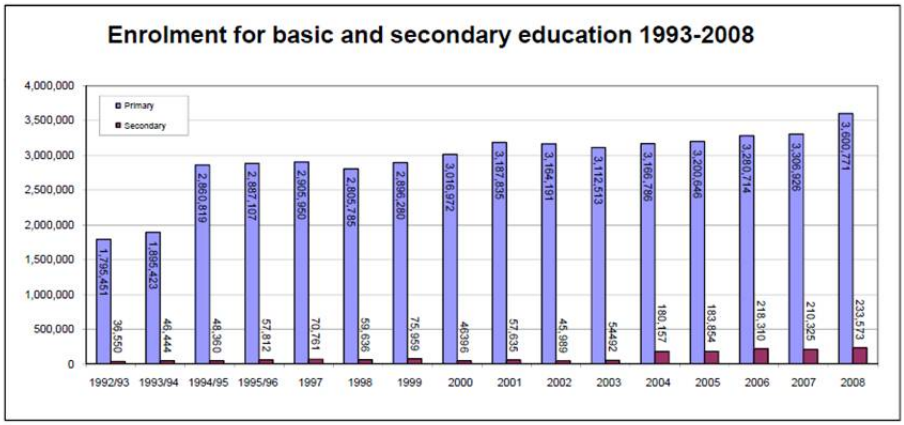
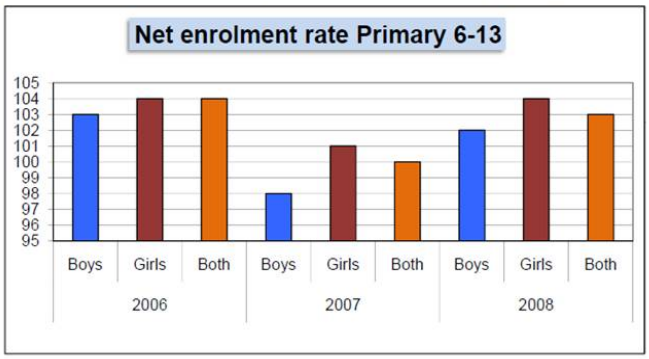


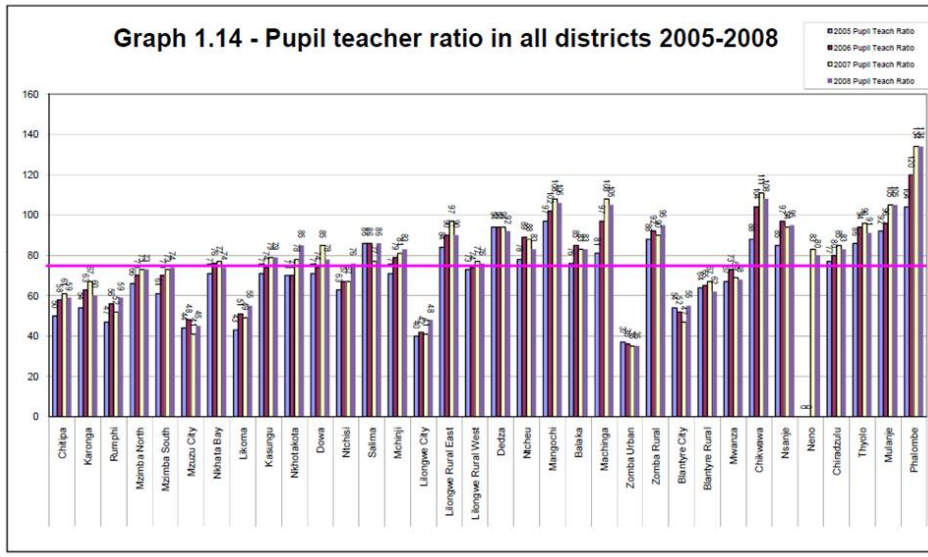
Table 1.3 Net enrolment rate Primary 6-13

	2006			2007			2008		
	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both
Population Age 6-13	1332943	1360066	2693009	1415656	1441987	2857643	1497452	1516496	3013948
Enrolment Age 6-13	1374605	1419282	2793887	1394189	1449611	2843800	1528668	1575818	3104486
Net rate	103	104	104	98	101	100	102	104	103



Note:- • NER (should not) exceeds 100% due to lack of accuracy in the reporting. School can not determine the correct age because there are no birth certificates for most of the pupils

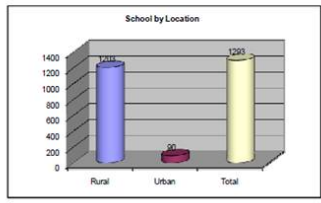
Table 1.4 - Gross enrolment rate Standard 1- 4

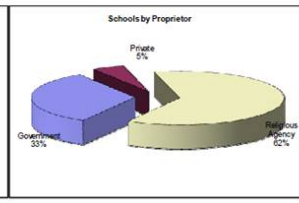


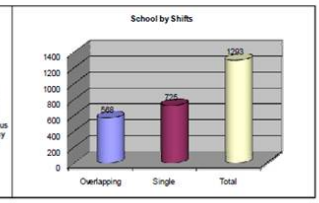
Status Summarized on a SINGLE sheet for Schools, Teachers, Classrooms and KPIs

Table - 2.1a Number of Primary schools, pupils, classrooms, teachers by Location, Proprietor, Type, Shift 2008

Northern Division	Location			Proprietor				Type				Shift		
	Rural	Urban	Total	Government	Private	Religious Agency	Total	Boys	Mix	Girls	Total	Overlapping	Single	Total
Total Schools	1203	90	1293	423	64	806	1293	3	1286	4	1293	568	725	1293
Pupils														
Boys	262327	20799	283126	87786	4815	190525	283126	2081	281220		283301	117062	166064	283126
Girls	251468	21490	272958	85124	4764	183070	272958		270910	1873	272783	111514	161444	272958
Total	513795	42289	556084	172910	9579	373595	556084	2081	552130	1873	556084	228576	327508	556084
Teachers														
Male	5574	259	5833	1825	3722	286	5833	19	5788	37	5844	2307	3526	5833
Female	2103	691	2794	966	1648	180	2794	30	2738	15	2783	872	1922	2794
Total	7677	950	8627	2791	5370	466	8627	49	8526	52	8627	3179	5448	8627
Trained Teachers														
Male	4402	849	5251	1511	72	3127	4710	23	4677	10	4710	1962	2748	4710
Female	1538	308	1846	890	39	1458	2387	18	2339	30	2387	792	1595	2387
Total	5940	1157	7097	2401	111	4585	7097	41	7016	40	7097	2754	4343	7097
Classrooms														
Permanent	4736	568	5304	1773	272	3259	5304	27	5236	41	5304	2051	3253	5304
Temporary	3063	162	3225	890	122	2213	3225	6	3219	0	3225	1555	1670	3225
Total	7799	730	8529	2663	394	5472	8529	33	8455	41	8529	3606	4923	8529
Pupils Teacher Ratio	67:1	45:1	64:1	62:1	2:1	802:1	64:1	42:1	65:1	36:1	64:1	72:1	60:1	64:1
Pupil Qualified Teacher Ratio	86:1	37:1	78:1	72:1	86:1	81:1	78:1	51:1	79:1	47:1	78:1	83:1	75:1	78:1
Percentage of Permanent Rooms	61	78	62	67	69	60	62	82	62	100	62	57	66	62
Percentage of Temporary Rooms	39	22	38	33	31	40	38	18	38	0	38	43	34	38
Pupil Class Room Ratio	108:1	74:1	105:1	98:1	35:1	115:1	105:1	77:1	105:1	46:1	105:1	111:1	101:1	105:1



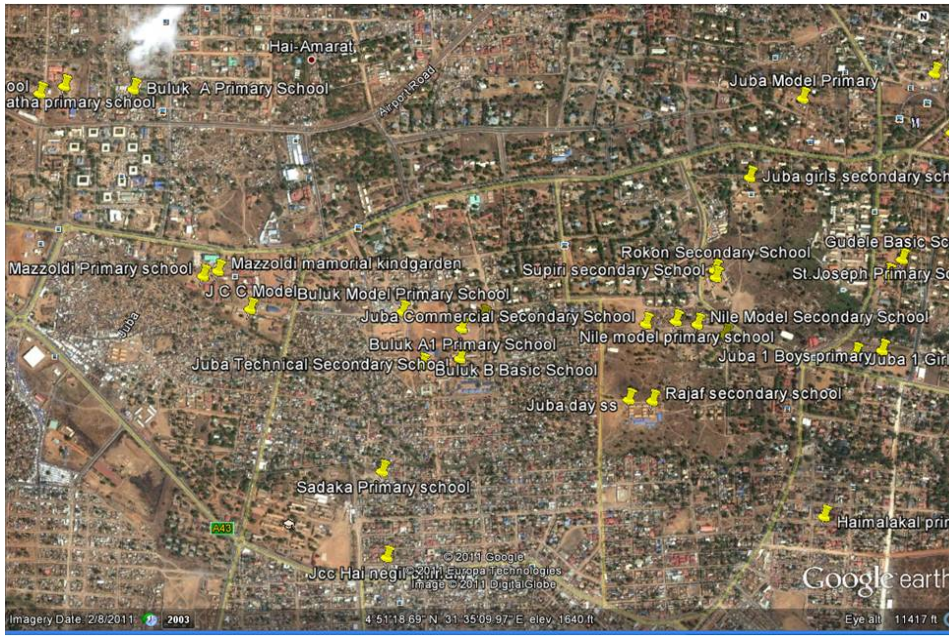




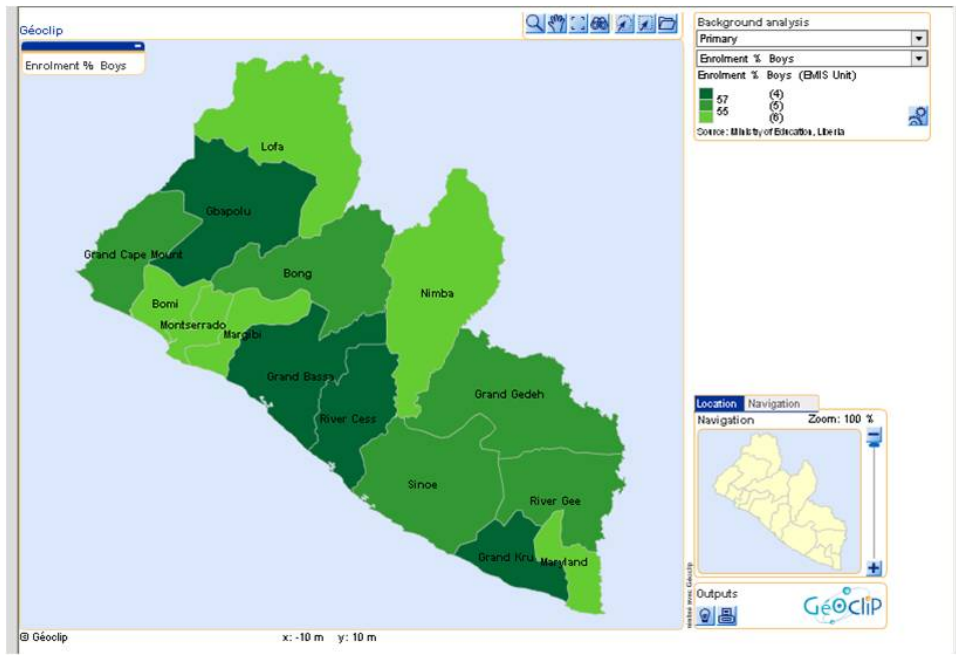
The Future - with more recent examples

Google Earth now allows for a more comprehensive, more natural presentation of schools and settings. Such presentations also allow for inclusion of KPI information through coloring and also at different levels of accuracy and resolution. Each school contains specific information:

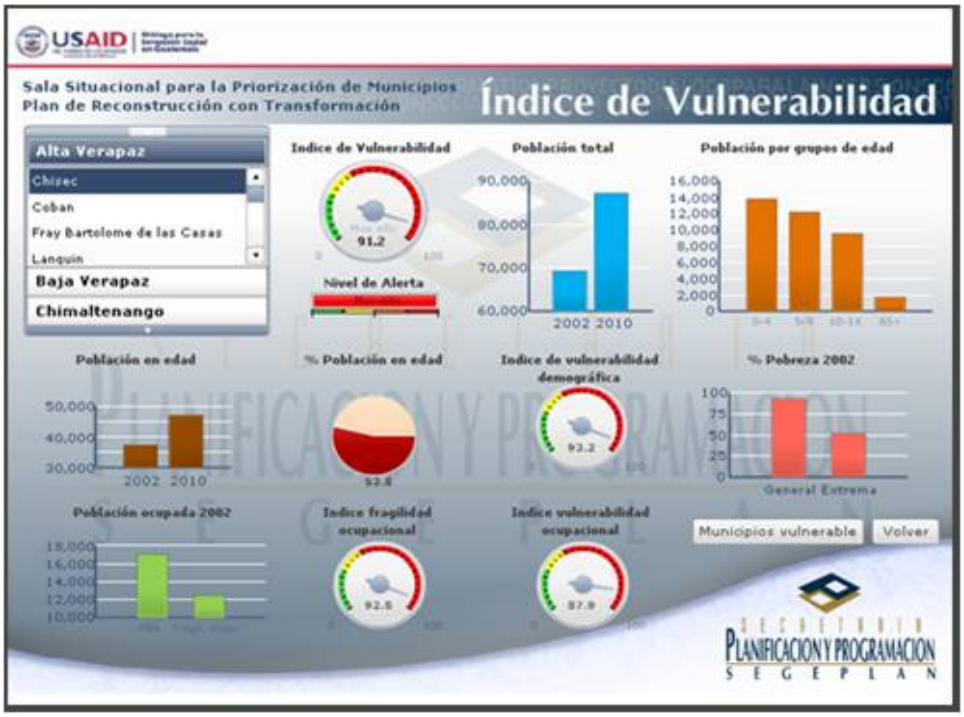
These details can also be tracked to the city/town level in places where Google Earth resolution allows it. These data were gathered using Smart Phones, which, carried by one data gatherer captured school pictures, geographic coordinates, and basic information—and then transmitted the same via cell networks to a central server. These data were available, for viewing, within the same day.



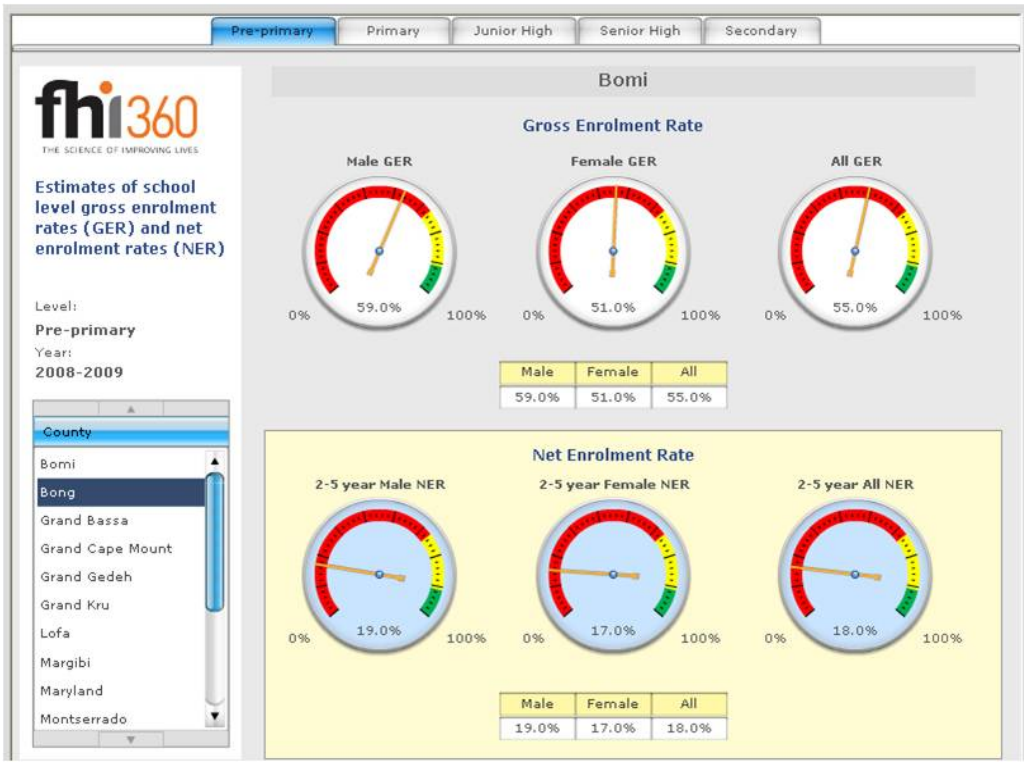
Thematic mapping can also be done with Google Earth interfaces to support quick overview of both geography and status according to KPIs.



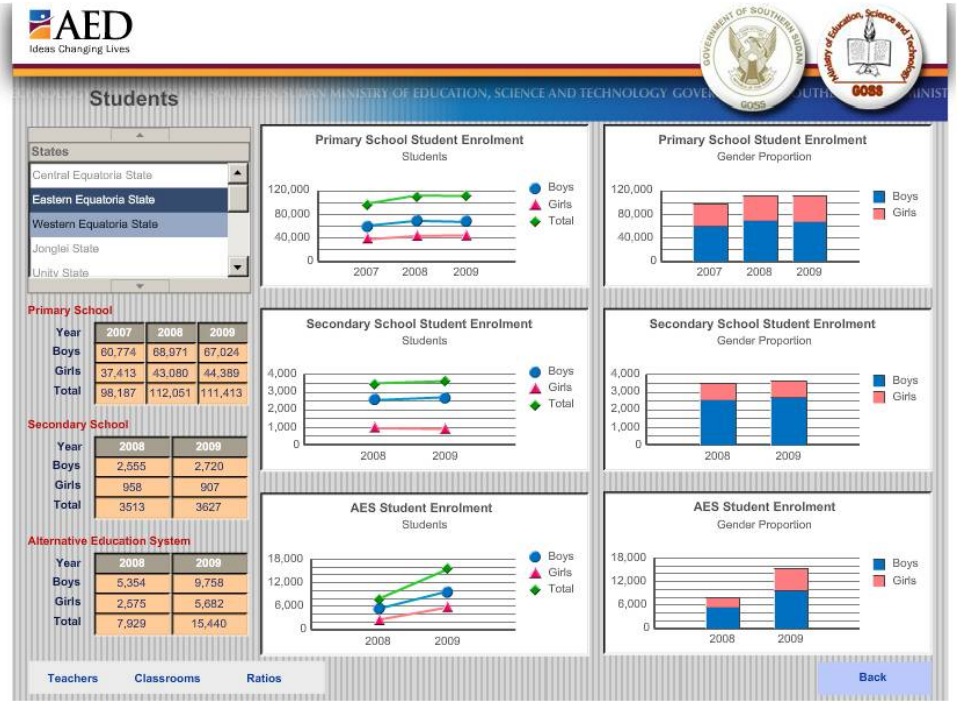
Dashboards are now a more powerful tool for presenting the status of key activities. Dials show the relationship between current status and poor, improving, and acceptable conditions.

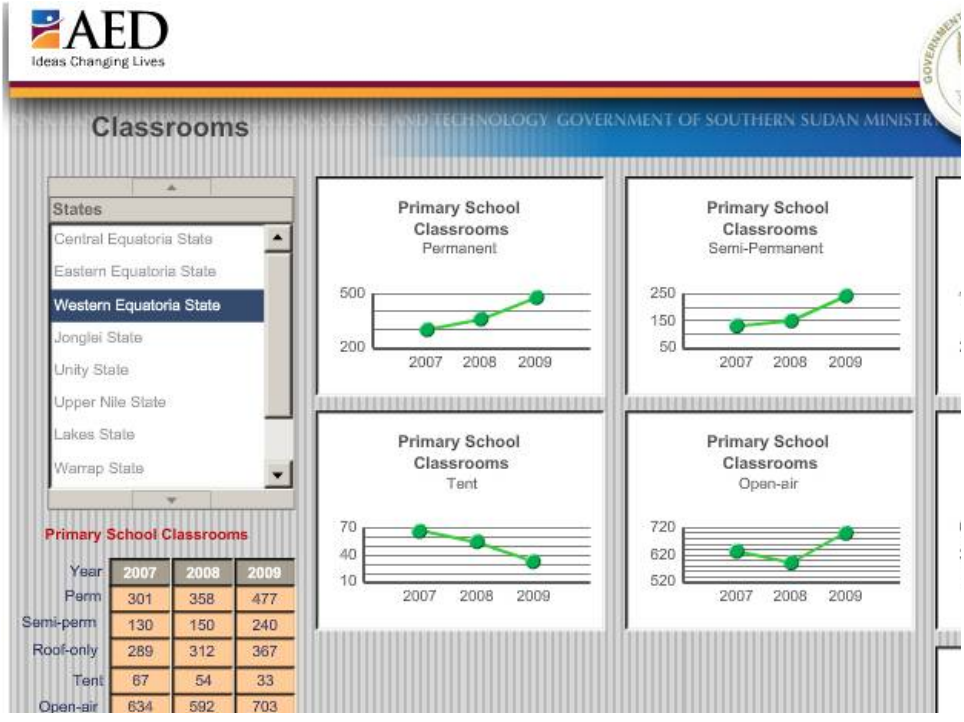


Dashboard presentations recently introduced in the EQUIP2-funded Liberia Education Project available at the County and District level.



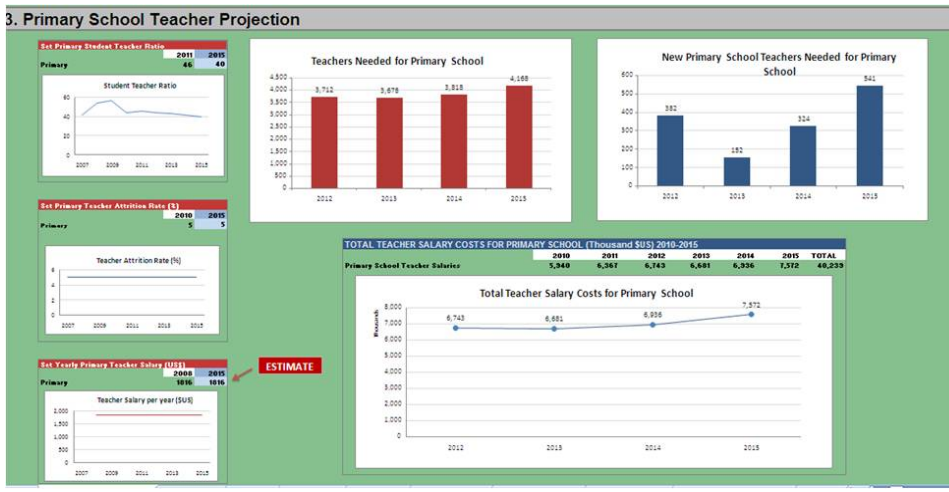
In South Sudan, the following mixture of dynamic statistics and graphs, available on any computer and in hard copy, now assist in showing historical trends and making evidence more available.

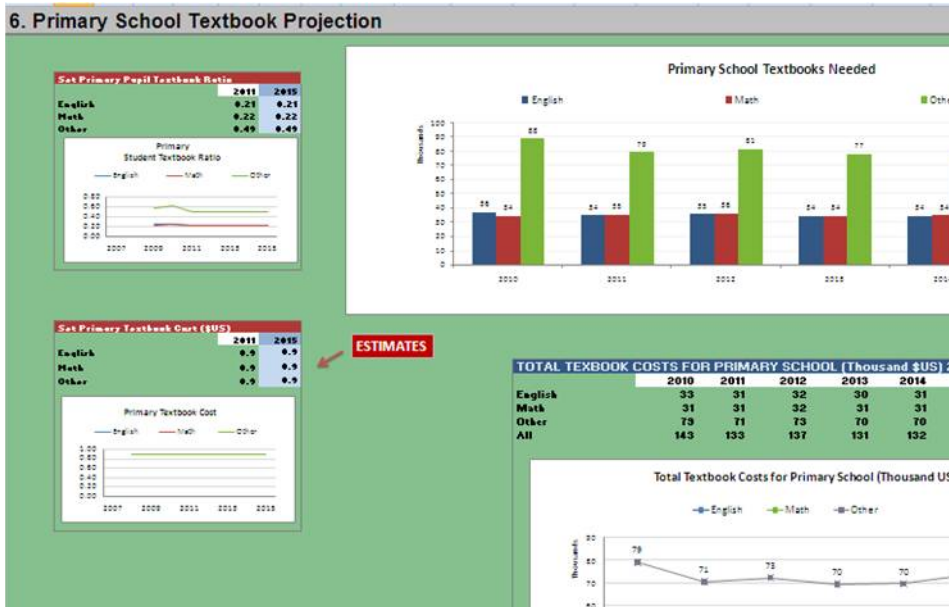




Increasingly, simulation of outcomes is important for planning and budgeting purposes. A proper EMIS provides the core information necessary for accurate forward planning—which should be affected primarily by assumptions about performance, and not about the historical base. The following system is now in use in South Sudan at both the National and State Level.

The examples are from key inputs including the numbers of teachers required, followed by a summary of the costs for the country.



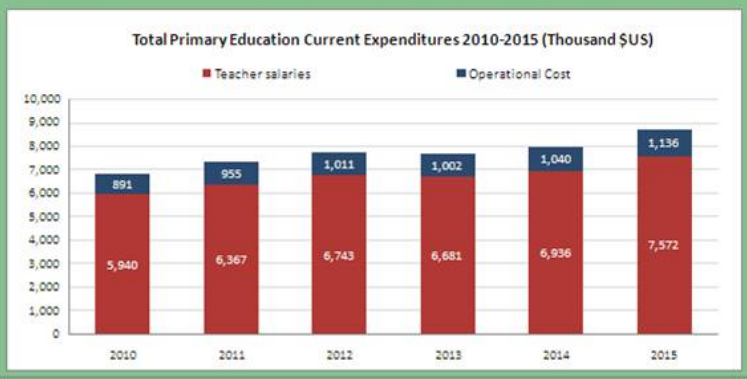


Summary results for both current and capital costs for South Sudan.

7. Current Costs Projection

Total Primary Education Current Expenditures 2010-2015 (Thousand $US)

	2010	2011	2012	2013	2014	2015	TOTAL
Primary Teacher Salaries	5,940	6,367	6,743	6,681	6,936	7,572	40,239
Operational (15% of Teacher Salaries)	891	955	1,011	1,002	1,040	1,136	6,036
TOTAL CURRENT COSTS	6,831	7,322	7,754	7,684	7,977	8,708	46,275



8. Capital Costs Projection

Total Primary Education Capital Expenditures 2010-2015 (Thousand $US)

	2010	2011	2012	2013	2014	2015	TOTAL
New Primary Classroom Building Cost	0	0	0	1,817	2,061	2,635	6,514
Primary Textbooks	143	133	137	131	132	139	814
Primary Teacher Training			2,370	2,904	2,974	2,525	10,772
TOTAL	143	133	2,506	4,852	5,167	5,299	18,099

Annex 2: EQUIP2 Associate Award Case Studies

A. UGANDA: STRENGTHENING OF THE UGANDA EDUCATION MANAGEMENT INFORMATION SYSTEM

Time frame: November 21, 2003–November 30, 2005

Funding level: Initial: $999,243; Final: $1,506,390

The information for this review is drawn from interviews with four individuals closely associated with the Uganda Support for Education Management Information System EQUIP2 Associate Award, including the USAID/Uganda education team leader who designed the project and oversaw its implementation, AED technical staff in Uganda and Washington, and a former Ministry of Education employee directly involved in implementation. It provides the basis for the lessons learned and insights found in Section II of this report.

This case is divided into the following sections: (1) Uganda context, (2) Uganda EMIS project design, (3) project implementation, (4) successes and challenges (as seen by the interviewees), and (5) Uganda EMIS post-2005. The last section (6) reflects on the Uganda EMIS EQUIP2 experience in terms of what can be useful for USAID education officers who design and oversee the implementation, monitoring, and evaluation of EMIS projects. It is divided into three sub-sections: what worked, what didn't work, and valuable insights.

The review is written in story form (e.g., what was the context and how did it influence the design, what influenced implementation and what was learned in terms of successes and challenges, what can be learned from monitoring and evaluation).

1. Uganda context

National and education context

Uganda is a land locked country located in northeastern Africa bordered by Kenya to the east, Sudan to the north, The People's Republic of Congo to the west, and Rwanda and Tanzania to the south. The colonial boundaries created by Britain

grouped together a wide range of ethnic groups with different political systems and cultures. These differences prevented the establishment of a working political community after independence was achieved in 1962.

Uganda has substantial natural resources, including fertile soils, regular rainfall, small deposits of copper, gold, and other minerals, and recently discovered oil. Agriculture is the most important sector of the economy, employing over 80% of the work force. Coffee accounts for the bulk of export revenues. As of 2008, only 13% of the population lived in urban areas.

Uganda ranks 143 out of 169 countries on the UNDP Human Development Index (UNDP HDI, 2010). According to World Bank statistics (2008) life expectancy is 53 years and adult literacy is 75%. HIV prevalence rates in Uganda, once among the highest in the world (13.8% in 1991) have gone down to 5.4% in 2008 (World Bank), thanks in large part to a major policy initiative of the Ugandan government backed by donors.

In education net primary enrollments rates are high at 97%, (World Bank, 2008), influenced in large part by a 1997 government policy of universal free primary education (again backed by the donor community). Net secondary enrollment rates, however, remain low at 22% (World Bank, 2008). In 2008 primary completion rates were 56%; public expenditures in education as a percentage of GDP were 3.8% (World Bank, 2008).

History of EMIS in Uganda and its status at the time of the EQUIP2 EMIS design[7]

The EQUIP2 Uganda EMIS project is the third of three consecutive EMIS support programs in Uganda. All three were implemented by AED in collaboration with Africon.[8] EMIS 1 was financed by the World Bank and implemented between 1999 and 2001. EMIS 2 was financed by DFID and implemented between 2001 and 2003.

EMIS 1 (1999–2001)

EMIS 1 had two objectives: (1) introduce EMIS in Uganda at a central level, and (2) decentralize EMIS in Uganda to districts. EMIS 1 accomplishments at the central level included: (a) building the human, technical, and procedural capacities required to institutionalize an operational EMIS capacity in the Ministry of Education, and (b) collecting, producing, and disseminating EMIS results,

7 The information contained in this section comes from a paper entitled, Lessons Learned on EMIS in Uganda prepared in 2010 by Douglas Drew under a recent award from USAID/Uganda to continue to support Uganda's EMIS system.

8 Africon is a South Africa-based international consultancy providing multidisciplinary, professional services in engineering, infrastructure-related development, and management. During the implementation of all three EMIS projects, AFRICON maintained an office in Kampala, Uganda.

based on the 1999 and 2000 Annual School Censuses. At the district level work was begun towards decentralization of the EMIS. However, due to delays in the procurement of computers (which were beyond the control of the project) and other factors, this objective was not fully realized although some progress was made.

For the 2001 Annual School Census, the release of the Statistical Abstract was in October of that school year. This timeliness, only nine months after the beginning of the school year, was considered good by international standards. Response rates were quite acceptable; 93% in primary schools and 88% in secondary schools.

In terms of institutional capacity, from 1999 onwards, a solid EMIS capacity was built up in the Statistics Section of the Planning Department of the Ministry of Education. Extensive training was carried out at all levels with project support: the principal statistician and another person (who travelled to Washington, DC) for data entry staff and supervisors, officers and additional staff members of the ministry's Department of Educational Planning. At the district level, delays in arrival and installation of computers in district education offices (outside of the project's control) also resulted in delays in training at the district level due to a desire to synchronize training with the availability of computers. By the end of the project, computers with the GLOBAL ED*ASSIST software had been installed in most districts except in inaccessible regions for security reasons. Piloting of district entry of EMIS forms had taken place in 10 districts.

A key challenge from the beginning was the discrepancy between the population estimates produced by the Uganda Bureau of Statistics and the enrollment figures generated by the Annual School Census.

EMIS 2 (2001–2003)

EMIS 2 had seven objectives: (1) foster the development of sound management principles in the Ministry (using appropriate statistical information) to ensure that commitments towards the improvement of education are met; (2) provide technical support to the MOE's management of the EMIS to ensure monitoring and evaluation for the Education Strategic Plan were met; (3) provide technical support and capacity building in statistics to the MOES Head Office and districts; (4) assist the MOES in the promotion of statistics and their effective use in planning, budgeting and management; (5) with the MOES , plan and implement skills training on EMIS and facilitate training workshops for different levels of staff, both at MOES headquarters and throughout the districts; (6) provide network administration and IT management advice at the MOE's head office and at the district level (all 56 districts); and (7) assess the feasibility of WAN usage by regions through a pilot.

An important focus of EMIS 2 was on sustainability: the consultant team was required to build capacity within the MOES over the 19-month contract period. A handover schedule was prepared indicating what skills transfers were required and milestones for when they should take place. The handover schedule was monitored and analyzed in quarterly project progress reports, and problem areas were flagged to be addressed to ensure EMIS sustainability.

Accomplishments: (1) A new Fact Booklet was introduced with key statistics by sub-sector; (2) The 2002 Abstract was redesigned with a new longitudinal analysis; (3) An EMIS database was installed at workstations of MOES senior managers and EDP members, with training in its use; (4) The Ministry's Web site was redesigned; (5) A LAN was set up which was fully operational with 130 of the 157 computers in the MOES head office connected to the LAN server; (6) End users were trained to use the LAN, Internet, and email; (7) EMIS data were backed up on the LAN server, exported to Excel and Word, and made available to all the users on the LAN; (8) The 2001 and 2002 Database and Data Dissemination Software (GLOBAL ED*ASSIST) were installed on all the district EMIS computers; (9) One-on-one training was provided to senior managers at the MOES; staff EDP were given three weeks of training to an intermediate level in computer skills (Word, Excel, and ACCSS); a plan was developed for EMIS skills training for in clerical, technical, operational, and senior management MOES staff, and to district education officers and district inspectors; (10) EMIS was extended to cover pre-primary, post-primary, non formal, and tertiary subsectors; school-level reports were introduced to all the software modules; (11) Response rates in 2002 had risen to 98% and 95% for government-run primary and secondary schools respectively.

At the district level, district education officers and district inspectors participated in the bi-annual training of senior MOES managers. The GLOBAL ED*ASSIST software and copies of the 2001 and 2002 databases were installed on computers in the districts. The districts benefited from training in using the system to generate reports, and were getting timely access to the data, via the dissemination of CDs. In addition, districts were provided school reports for feedback to schools. These reports showed the school's performance for a number of indicators compared to district and national performance.

By the conclusion of the project a number of the handovers to the MOES, anticipated when the project was designed had not been achieved. Various factors contributed to the failure to meet handover milestones: (1) The education system had more than doubled over the previous five years resulting in an increased workload of the EMIS staff; (2) Changes in the counterpart staff member on the Ministry's side meant handover of tasks for this function had to be repeated; (3) The pilot WAN project experienced some major problems that made the transfer of skills not possible at this stage; (4) Limitations in staffing did not allow the head

office to support problem districts so that the national level data collection did not suffer; and (5) There was an absence of needed policy-level guidance regarding EMIS in the form of a Ministry-wide mandate.

2. Design of the Uganda EQUIP2 EMIS project

Design context and process

David Bruns, USAID/Uganda education team leader from 2001–2006 drafted the scope of work for the EQUIP2 Associate Award designed as a follow on to EMIS1 and EMIS 2. At the time of the design the donors were negotiating a Fast Track Initiative (FTI) with the MOES focusing on increasing access to and quality of primary education.

As Bruns observed, "Our sense was that we would need more data to guide what the FTI would look like. A lot of the budget support agencies were looking at conditionalities for budget release. We at USAID figured that for a small amount of money we could be at the table helping the agencies with their tranche releases. The donors would only release money if teacher–student, teacher–classroom ratios, classroom–textbook ratios were in line. The donors were trying to help the MOE with real inputs and needed systems to monitor that would be timely." Funding was not available within the USAID/Uganda education budget to finance this activity. However, Bruns was able to obtain, both in 2003 and 2004, limits amounts of discrete funding available competitively from USAID/Washington to support Fast Track Initiatives.

In terms of USAID's role, he observed, "We branched out and also did the geographical information system (GIS). One thing is to say what the student–teachers ratios are; the other thing is the intra-district disparity. We wanted to help the MOE decide where to put that extra teacher. This was the genesis for a small, discrete program to improve EMIS and link with the GIS."

EQUIP2 Associate Award objectives/purposes[9]

The EQUIP2 Associate Award, financed initially for one year and then extended for an additional year, had six objectives:

1. A school mapping exercise (GIS) to improve the credibility of the EMIS data to all the stakeholders
2. A systematic effort at institutionalization of the EMIS, including a detailed plan to increase analytical activities, as well as the provision of top-level skills to increase the technical sustainability of the existing EMIS systems

9 The information included in this sub-section and those that follow is drawn from the Uganda EQUIP2 EMIS RFA.

3. An increased level of training for EMIS, not only at the Ministry headquarters, but in Districts as well
4. Creation of a mini-census for twice yearly updates for primary schools
5. Completion of a Wide Area Network (WAN) concept using cellular techniques
6. Coordination and supervision of a long-term Education Strategic Investment Plan

Design assumptions

The RFA did not contain any design assumptions. However, David Bruns who was responsible for designing the RFA, identified four assumptions: (1) There would be a strong demand for the data, especially from the donors; (2) The MOE would support the regional- and district-level training, as well as organize it and co-fund or fund it; (3) The GIS, would generate a lot of interest, all the way up to the Minister; and (4) People would not be afraid of what the data could show.

Deliverables

The Program Description provided for five deliverables:

1. A detailed report of not more than 50 pages outlining the progress and development of EMIS sustainability at the Ministry of Education and Sports
2. A functioning geographical information system (GIS) providing a complete map (location and education data) of all primary schools in Uganda
3. A functioning Wide Area Network (WAN) providing internet services between all major offices of the MOES
4. A detailed report of not more 20 pages describing progress made in assisting district EMIS development plans and key milestones linked to the district development plans
5. A system developed to facilitate effective management of the teachers' payroll and benefits scheme

3. Implementing the Uganda EQUIP2 EMIS Associate Award

Implementation approach

AED implemented EQUIP2 EMIS in close collaboration with AFRICON, building upon progress and addressing challenges from the prior EMIS awards. AED provided technical assistance from a distance and through periodic visits to Uganda by the home office Project Director. Africon, which had an office in Kampala, provided day-to-day technical assistance, training, and oversight through qualified Ugandan experts hired for the project and a highly qualified technical advisor based in Africon in South Africa who periodically visited Uganda. MOES personnel carried out all data gathering, both for the EMIS and for establishing

the GIS. Training for Ministry of Education staff was carried out in Uganda, Washington, DC, and South Africa.

During the first year, the decision was taken to substitute the creation of a mini-Census for twice-yearly updates for primary schools with School Attendance Registers, with data to be collected quarterly, which was more relevant to the Ministry's current needs.

When the results of the main school mapping exercise were presented to education stakeholders and their partners during November 2004, near the end of the one-year Associate Award period, the need for additional work was highlighted. USAID/Uganda, again seeking centrally funded FTI monies available competitively, was able to obtain an additional $507,000 to: (1) Map additional education sites, including 570 coordinating centers; (2) Introduce new education quality indicators, including survival rates, P7 Completion Rate and Schools P7 Examination Performance Index, disaggregated by sex; (3) Create linkages between the EMIS, the Uganda National Examinations Board (UNEB), and the GIS system – a critical step for sustainability; (4) Produce additional GIS maps for districts and the proposed Parliamentary presentation; (5) Provide intensive technical training for GIS maintenance and enhancement to support the district teams; and (6) Create core analytical and training teams and support additional district level training to improve analytical skills and data collection and updating.

Adequacy of time frame and budget and effectiveness in building sustainability
As was mentioned above, USAID/Uganda was able to obtain small amounts of discrete funding ($999,000 in 2003 and another $507,000 in 2004) to finance the EMIS initiative. However, as all interviewees pointed out, this was not sufficient to achieve the objectives of the Associate Award, especially looking toward sustainability of actions carried out.

Key Outcomes
Most of the objectives were achieved, as listed below:

1. The school mapping exercise (GIS) was completed. A master list of schools was linked to the EMIS database. GIS equipment and software were acquired for the Education Planning Department. A number of thematic maps were produced, for the Ministry of Education headquarters, other users, and for districts.
2. During 2005 there were two specific, intensive trainings in the use of maps, and the concepts behind map use for education policy decisions. In addition, key technical MOES personnel were given on-the-job training in map maintenance and manipulation. Selected personnel from the MOES head

office and certain district personnel were given additional training in the use of GIS Maps for more detailed analysis.

3. Three members of the Education Planning Division of the MOES were sent for two weeks training in South Africa, to develop skills in the GIS software required to run and maintain the system (although it was subsequently found that those sent to receive this training did not have the requisite skills to fully understand it).
4. Nine members of the MOES received extensive training in the United States in EMIS software application maintenance.
5. Policymakers and technical support personnel were trained in parallel on similar but separate skills for between two and three weeks.
6. District Education Officers and three persons from each district office received three days of training in the use of EMIS, GIS, and basic calculation skills related to education indicators.
7. Replacing the mini-census, the project provided technical assistance to the Statistics Section in the development of methodology and procedures to collected data on a quarterly basis on full and half-day attendance. Although the collection of information was operational by the conclusion of the project, the scanning and production of data were not yet operational, although all the pieces were in place.
8. GLOBAL ED*ASSIST was extended to calculate survival rates and P7 completion rates.
9. EMIS data was linked to the PLE exams results for 2004.
10. The WAN concept was completed: a report was prepared outlining an approach to linking head office and all district offices along with options and pricing, for consideration and decision taking by MOES.
11. An expert was contracted who provided the required assistance in preparing ESIP-II.

4. Factors within and outside USAID and EQUIP2 control that favored accomplishments and served as deterrents

Interviewees were asked to reflect on elements of the Uganda EQUIP2 EMIS Associate Award that were successful and on challenges. The following is taken from a longer list of reflections provided by the interviewees.

Factors that were seen as favorable

- "This year's data" continued to be available "this year" (2003 and 2004)
- Uganda was able to use data from the EMIS and the GIS to make decisions. For example, a number of districts reallocated teachers based on the mapping exercise. Thanks to the school mapping exercise, for the first time a lay person

could understand the data: red schools were seen bad in terms of student/ratios and other indicators and green schools were seen as good.
- Donors used the education data the EMIS generated to track progress in meeting conditionality under the Fast Track Initiative and the Ministry of Education responded in kind by taking actions to improve performance on key conditionalities.
- Thanks to the GIS, district education staff now knew where all their schools were located. District education staff put the GIS maps on their walls. For the first time it was possible to used population statistics for providing backstop support to schools.

Challenges
- The conditions for meeting sustainability were not met.
- It would appear that there were not enough resources for skills transfer.
- The Director of Planning sat on the school maps for several months, frustrating district education staff who wanted to receive their school maps as soon as they came out.
- Certain staff responsible for collecting the EMIS data refused to do the job. Although they received the requisite training some lost interest. They didn't maintain the discipline required to collect the data.
- EMIS and other MOES staff would get trained and then they would leave the MOE.
- It was not possible to fully decentralize the EMIS.
- At the time the project ended MOES staff were just beginning to use the GIS; MOE staff did not acquire the skills needed to maintain the GIS. Three Planning staff members received three weeks of training towards the end of the project, but the training was viewed as too technical, and the full skill transfer was not successful.
- In terms of quarterly collection of attendance data there was not sufficient time in the EQUIP2 project to ensure the scanning equipment and systems for capturing attendance data were operational.

5. Uganda EMIS post-2005

In 2006, after USAID support for EMIS ended, the MOES Planning and Data Unit, with the support of the UNESCO Institute for Statistics, installed UIS EMIS software to replace the GLOBAL ED*ASSIST software used up until that point. The UIS software was available free of charge, and support in installation of the software was provided by UIS, also free of charge. This software was in use for the period 2006–2009.

When this software was installed it was seen as having some advantages over GLOBAL ED*ASSIST being used. UIS software was server based, so as each data entry clerk completed a form, it would be directly uploaded to the database. GLOBAL ED*ASSIST was based on an ACCESS database, which also operates in a server mode, but was not initially configured for that purpose. A second advantage of the UIS system was that the database was longitudinal in design, containing data for all years and all sub-sectors of education in a single database. In contrast GLOBAL ED*ASSIST had a separate database for each year. The main advantage of a multi-year database was to permit multi-year or longitudinal data analysis.

Although the new software had the above advantages over GLOBAL ED*ASSIST software, there were other aspects where GLOBAL ED*ASSIST performed much better. These included the Questionnaire Tracking System (QTS), which provided control over which forms had been received and which remained outstanding. In fact, the Statistics Section managed to integrate the QTS module into the new software environment, and is still using it. GLOBAL ED*ASSIST was also found to be easier to use than the UIS system for overall report production.

During 2005–2009 there was a marked slippage in operations and capacity in the EMIS in Uganda. Data integrity problems persisted and the timeliness of data releases worsened. The response rates for private secondary schools continued to be a problem, and some response rates for primary schools worsened. In 2008, only about half of private secondary schools (50.4%) responded, yielding an overall response rate of 64.1% for secondary schools. For primary schools the response rate slipped to 83.4%.

The Statistics Section also became vulnerable; in 2009 only one of three statistician positions were filled. The LAN, which was set up and operational by the end of the EQUIP2 EMIS project, was working but not all personnel were connected. The MOES had turned to the Internet as a means of providing access to EMIS data, both internally and externally. However, Internet connectivity became slow and unreliable.

At the district level, monies to facilitate certain operations, such as the district operations in support of the collection operations, disappeared. As a result, districts have been forced to find ways to piggyback the collection operations on other activities. The result has been a contributing factor to the slower data collection and lower response rates. In addition, production of CD's (that were sent to the district annually in prior years) and school reports stopped in 2006. The only other feedback districts receive is via the occasional presentation of EMIS results in workshops organized on other topics. Districts no longer receive facilitation money to help offset the costs associated with distributing and gathering the School

Census forms. Efforts during project periods to build EMIS capacity in districts were not sustained.

In April 2010 the MOES selected Agile Learning Company to design and develop a new decentralized national EMIS. Under a Memorandum of Understanding signed between USAID, the MOES, and Microsoft, the Ministry is embarking on decentralizing its EMIS solution to its 81 existing districts, and 17 newly created districts. Agile's responsibilities include designing and developing the decentralized EMIS–GIS solution, installing the solution and providing specialized training on EMIS–GIS to national and decentralized education stakeholders.

6. Reflecting on the Uganda EQUIP2 EMIS experience in terms of what can be useful for other USAID EMIS projects

What worked

- Continuity in terms of the key-implementing actors (AED and AFRICON) from prior projects was useful, even though they received funding from different external entities (World Bank, 1999–2001; DFID, 2001–2003; USAID, 2003–2005).
- "This year's data" was produced "this year" (in 2003 and 2004) with the help of outside TA.
- Data generated by the EMIS and GIS was used for decision making by the MOES to allocate teachers and textbooks districts; and by donors to hold the Ministry of Education accountable for conditionalities established under the FTI.
- The EMIS/GIS produced easy-to-read printouts for use at the district and other levels.
- There were high EMIS coverage rates: reaching 98 and 99%.

What did not work

- It was not possible to achieve sustainability without some type of graduated ongoing assistance.
- Designing the project on a yearly basis with unclear funding for future years makes it difficult to engage in longer-term activities, such as training and planning; among other problems, it is harder to keep qualified local and external technical assistance.
- Continuity is also more difficult without qualified Directors of Planning who remain in their positions.
- Staff turnover in the EMIS unit and other EMIS-related units is an endemic problem; people get trained and then leave the MOES for higher paying jobs in the private sector.
- MOES staff have limited capability to interpret/use data without external donor assistance.

Valuable insights from interviewees

On achieving sustainability:

If there was a slight Achilles heel to the project, that was it. Even though there was a demand for information and happiness that it was there, the project required more resources to be a sustainable activity. We didn't meet that threshold in terms of resources. (David Bruns, USAID/Uganda education team leader)

On where donors have a large stake in data generated by an EMIS:

Uganda was a fascinating example of donor coordination. You can't underestimate the importance of EMIS especially where donors have a huge stake/investment in Ministry of Education operations—at one time donors were supporting up to 70% of all operating expenditures. In the case of Uganda, where other donor supported the Fast Track Initiative, the Ministry of Education and Sports respected the relationship between the money they received from the donors and the targets they had to achieve. These targets were measured through the annual EMIS data collections. (Kurt D. Moses, AED Vice President and Washington EMIS specialist).

B. MALAWI: EDUCATION SECTOR POLICY, PLANNING, EMIS SUPPORT ACTIVITIES AND HIGHER EDUCATION STRATEGIC PLAN DEVELOPMENT

Time frame: July 8, 2003–June 20, 2008

Funding: Initial: $1,985,620; Final: $2,704,581

The information for this review is drawn from interviews with seven individuals (including USAID/education staff, EQUIP2 staff and technical advisors in Malawi and AED/Washington; and former Ministry of Education staff) closely associated with the Malawi Education Sector Policy, Planning, and EMIS Support Activities and Higher Education Strategic Development EQUIP2 Associate Award. It provides the basis (for the lessons learned and insights found in Section II of this report.

This case is divided into the following sections: (1) Malawi context, (2) Malawi EMIS project design, (3) project implementation, and (4) successes and challenges (as seen by the seven interviewees). The last section (5) reflects on the Malawi EMIS EQUIP2 experience in terms of what can be useful for USAID education officers who design and oversee the implementation, monitoring, and evaluation of EMIS projects. It is divided into three sub-sections: what worked, what didn't work, and valuable insights.

This review is written in story form (e.g., what was the context and how did it influence the design, what influenced implementation and what was learned in terms of successes and challenges, what can be learned from monitoring and evaluation).

1. Malawi context

National and education context

The Republic of Malawi is a landlocked country in southeast Africa that was formerly known as Nyasaland. It is bordered by Zambia to the northwest, Tanzania to the northeast, and Mozambique on the east, south, and west. The country is separated from Tanzania and Mozambique by Lake Malawi. Its size is over 45,560 square miles with an estimated population of more than 13,900,000.

Malawi was first settled during the 10th century and remained under native rule until 1891 when it was colonized by the British who ruled the country until 1964. Upon gaining independence it became a single-party state under the presidency of Hastings Banda, who remained president until 1994, when he was ousted from power.

Malawi is among the world's least developed and most densely populated countries. The economy is heavily based in agriculture with around 85% of the population living in rural areas. More than one-third of GDP and 90% of export revenues come from agriculture. The Malawian government depends heavily on outside aid to meet development needs, although this need (and the aid offered) has decreased since 2000. The Malawian government faces challenges in growing the economy, improving education, health care, and the environmental protection and becoming financially independent.

Malawi is ranked 153 of 169 countries in the United Nations Human Development Index (2010), ranking in the "low human development" category. Malawi has a low life expectancy of 50.3 years and high infant mortality. Adult literacy rates are at 72%. There is a high prevalence of HIV/AIDS (11.9%) that is a drain on the labor force and government expenditures. The HIV/AIDS pandemic has aggravated the overall human resource situation, disproportionately affecting teachers, who represent one of the largest networks of civil servants in the country and disproportionately high numbers of children. Among school-aged children from 6 to 14 years, about 14% are classified as OVC (orphans or victims of conflict), over half of whom are estimated to be AIDS orphans.

Between 1994 when Malawi's new president declared free universal primary education and 2003 student enrollments at the primary level increased dramatically; however, it led to substantial negative effects to the quality of education given, among others, the inability of the education system to find sufficient qualified teachers to match dramatically increased enrollments. In 2006 net primary enrollment rates were at 75% having increased from 58% in 1992. High teacher student ratios and the quality of education varied substantially between rural and urban areas. Education expenditure in 2003 was 5.8% of GDP (World Bank).

Status of Malawi's Education Management Information Systems (EMIS) at the time of the Malawi EMIS EQUIP2 design

When USAID decided in 2003 to support strengthening Malawi's EMIS system, the Ministry of Education (with support from a progression of donors since the early 1990s) had an installed EMIS system with computers, software, and a skeleton EMIS staff who had received some training. However, there was limited credibility in the accuracy/validity of the data being generated by this system. GTZ therefore, which was supporting teacher training in Malawi, had started collecting its own data on teachers. The Canadians, who were supporting infrastructure, were collecting their own data on facilities. The French, who were supporting textbook development and distribution, were collecting their own data on textbook production and distribution. The Danes, who were supporting programs focusing on student health, were collecting their own statistics on student health.

Although there was common agreement that a unique data source was required, preferably housed in the MOE, to collect credible data that both the MOE and donors could use for planning purposes and to track investments, no one had stepped forward to assist in doing this.

2. Design of the Malawi EMIS project

Design context and process

Bill Mvalo, USAID/Malawi education team leader from 2002 to 2005 reflects on the origins of the Malawi EMIS project. "The Ministry of Education did not have up-to-date information on many aspects of education in the country. Information, where available, was either out of date or unreliable. In other instances education data was non-existent. In 2002, the Government of Malawi had embarked on developing a Policy Investment Framework for the education sector to address the need for a well-designed long-term national education strategy. Due to the lack of an effective education management information system in the Ministry, policy direction and investments in education would possibly not have had a proper basis. We said, Let's help the Ministry of Education establish an effective EMIS for purposes of having a platform for education planning and for education assistance."

During the design process, USAID secured an agreement from the Ministry of Education and other donors that with USAID support the MOE would set the stage for creating a common EMIS. All donors agreed with this and turned over their historic files. At the time the EMIS portion of the project was being designed, the MOE's Planning Division had 16 vacancies. Two Malawians ran the central EMIS, located in the Planning Division.

Associate Award purpose and assumptions underlying the design[10]

The purpose of the EQUIP2 Associate Award was to address key constraints to system improvement—in policy, systems and strategies, and organizational capacity. It was envisioned that EQUIP2 would help improve strategic planning and management for the Policy Investment Framework implementation, strengthen the EMIS, and develop strategic business plans for the University of Malawi and Mzuzu University. In addition, it was envisioned that the Associate Award would establish systems and capacity in the MOE Planning Department team to support decentralized planning and management at the district level. In particular, the EQUIP2 Associate Award would assist in developing an integrated EMIS that would support the development of the Policy Investment Framework, the Malawi Poverty Reduction Strategy, Malawi's Education for All plan, and 33

10 The information included in this sub-section and those that follow is drawn from the Malawi EMIS EQUIP2 Proposal prepared by AED.

district education plans linked to district development plans. The initial design called for project that would last a year and a half.

Assumptions underlying the design of the EQUIP2 Associate Award

The USAID RFA did not contain any design assumptions. However, Bill Mvalo, during the interview for this study, identified three assumptions: (1) adequate technical assistance would be available; (2) the Planning Unit in the Ministry would be committed to carrying out the project; and (3) the statistical unit itself must have the capacity.

Implementation strategy for the EMIS component

The implementation strategy for the EMIS component called for the following sequence of activities: an initiation seminar, an introduction of an enhanced EMIS version, training of EMIS staff in the application of the enhanced version, and developing institutional capacity at the division/district level. Specific actions under each activity may be found in the textbox below.

Initiation Seminar

- Set the collaborative tone and establish a common understanding of concepts and goals of activity.
- Demonstrate how EMIS can support MOEST and encourage active support/assistance of other donors
- Identify key "political" deadlines to which EMIS will need to respond
- Develop parameters for EMIS Needs Assessment

Modify Existing EMIS/Introduce Enhanced Version

- Continue to produce needed information while upgrading capacity to generate/use it
- Simplify parts of the information gathering process
- Alter locus of collection of data
- Maintain, enhance, modify existing EMIS software
- Identify elements of other systems to incorporate
- Generate a series of standard, vetted, school level-reports and comparable summaries
- Introduce quality control features at multiple levels to ensure higher quality base information

Train Ministry Staff

- Develop a detailed training plan on the findings of the EMIS Needs Assessment
- Use a series of curriculum "masters" from Microsoft to assess actual working skills
- Use a series of structured observations/questions to determine training needs
- Link training process to organizational capacity to achieve key priorities of Planning Division
- Implement through courses offered by in-country providers as well as working seminars conducted by consultants

Institutional Capacity at Division/District Level

- Assure that Ministry of Education staff can use existing information effectively.
- Ensure that districts have necessary institutional, human, technical, financial resources to perform their jobs
- Train division/district staff in the production/use of data, upgrade data management equipment

3. Implementing the Malawi EQUIP2 EMIS Associate Award

Design choices that guided implementation of the EMIS component
In preparing the Malawi EQUIP2 RFA, and as is referenced above, USAID/Malawi made a number of design choices and assumptions that would guide ERP implementation. They included:

1. That there would be adequate technical assistance;
2. That the Planning Unit would be committed to carrying out the project;
3. That the statistical unit itself would have the needed capacity to maintain an credible and timely EMIS; and
4. That with a credible and timely EMIS that other donors would cease collecting their own data and look toward the Ministry of Education's EMIS as THE source of information on Malawi education statistics.

As will be seen in the sections that follow, design choices 1 (that there would be adequate technical assistance) and 4 (that donors would look toward the Ministry of Education's EMIS as THE central source of credible information on Malawi education statistics) were born out. However, for reasons outside of the project's control, design choice 2 (that the Planning Unit would be committed to carrying out the project) and 3 (that the statistical unit itself would have the needed capacity to maintain a credible and timely EMIS) were only partially born out.

Implementation approach
The Malawi EQUIP2 project, under its initial design, had the Policy Planning and University of Malawi and Mzuzu components under the responsibility of the Education Development Center (EDC), and the EMIS component that was the responsibility of AED. The Chief of Party was from EDC. When funding came to an end after 18 months USAID decided to extend it, focusing exclusively on the EMIS component. Yearly extensions were provided up until 2008.

Starting in 2005, responsibility for implementation of the yearly extensions was vested with the AED EMIS technical advisor, Fahim Akbar, who became Chief of Party. Fahim collaborated with Kurt Moses, the AED home office backstop in Washington, DC (who had many years of experience supporting countries to install and maintain EMIS systems). Together they provided all the training, technical assistance, as well as hardware and software backstop support to keep the project running. MOE staff were responsible for the annual data collections.

Thomas LeBlanc, USAID/Malawi education team leader between 2005 and 2007, recalls EMIS implementation during the time he was in Malawi, "We were focusing on EMIS, the collection and processing of data for decision making at the national and district level. In terms of policy, Kurt Moses came periodically to do

workshops for senior decision makers. Fahim Akbar was running implementation on the ground working in the Ministry of Education. Fahim did a fantastic job was training people to do all aspects of the work. Fahim was able to collect, process, and produce data within the same year, which was completely unheard of at the time. Kurt would come along to demonstrate what the Ministry of Education could do with the data."

In 2007 when Tom LeBlanc departed for his next USAID he was replaced by Marisol Perez as USAID/Malawi education team leader. Perez extended the Associate Award for another six months, preferring starting in 2009 to initiate a new EQUIP2 Associate Award centered on education decentralization. Support for EMIS continued but focused at the district level.

Adequacy of time frame and budget and effectiveness in building sustainability
Although a five-year time frame did not seem to be an issue, the amount of yearly funding (approximately $500,000) limited the activities that the project could carry out. Combined with an inability to plan beyond one year since the project was extended year by year starting in 2005, these were seen as important constraints to re-establishing the MOE's EMIS and setting the base for sustainability.

EMIS outcomes
The EMIS portion of the EQUIP2 Malawi Associate Award resulted in a number of significant outcomes:

- The EMIS had become the only official and authorized education data source for all Malawi.
- The coverage rate for primary schools exceeded 98.5% each year.
- Education statistics for 2005, 2006, and 2007 were released the same year in November of 2005, 2006, and 2007 respectively, and 2008 data collection was scheduled to be completed by the end June 2008.
- GLOBAL ED*ASSIST Malawi CD's were produced for 2004, 2005, 2006, and 2007 and released in November of each year.
- The main EMIS office at the Ministry of Education had been refurbished with new servers, workstations, and a local area network.
- Malawi GLOBAL ED*ASSIST software enabled the production of more than 100 reports on almost every section included in the EMIS questionnaire.
- The EMIS software and data sets had been installed on almost every computer in the Ministry of Education.
- The Ministry of Education had the capability to produce reports according to individual office needs.
- Data had been published in booklet format for quick reference, and digital copies were available in PDF format.

- Numerous trainings had been organized and delivered to the PEAs (primary education advisors) and other officials from the MOE. Intensive training had also been organized for district staff.
- 24 out of 33 district-level EMIS offices were directly involved in data collection, entry, and production.

4. Factors within and outside of USAID and the Malawi EMIS control that favored project accomplishments and served as deterrents

Interviewees were asked to reflect on elements of the Malawi Associate Award that were successful and on challenges. The list below includes successes and challenges that were not mentioned above.

Factors that were seen as favorable

- The Associate Award was able to stabilize the core EMIS system and in so doing stabilize donor requirements.
- It was possible to articulate future EMIS needs.
- The EMIS data brought to light student– teacher ratio disparities in rural areas and the EMIS data were fed into district planning.

Challenges

- The fact that the project was funded yearly meant that the USAID/Malawi education office never knew if it was going to get the correct amount of funding from USAID/Washington. This made it difficult to plan long term or to arrange for needed ongoing MOE staff training.
- Staff turnover at senior levels was high; during the five years of the project there were four Ministers of Education and four Permanent Secretaries.
- MOE senior management made little use of the various reports the EMIS generated for policy dialogue, analysis, and management of schools.
- With frequent changes in Malawi EMIS staff, the day-to-day operations of the Ministry of Education EMIS came to depend inordinately on the EMIS advisor; thus by the end of the project the MOE still lacked the qualified staff to support the EMIS independent of EQUIP2.
- By the end of EQUIP2, the MOE could not finance the EMIS. Between 2003 and 2008, EQUIP2 had been responsible for all financial expenditures to support the EMIS activities.
- Most schools had poor records that made it difficult to fill out the EMIS questionnaire properly.
- Most district staff were either unqualified or had limited capacity to take on the demands of the EMIS activities.
- Five years were not long enough to fully institutionalize the EMIS within the MOE and create the capability in all districts to input data for the EMIS and

use the results for decision-making. Given the personnel turnover along with major shifts in policy, developing a sustainable culture of information might be a 15 year plus process.

5. Reflecting on the Malawi EQUIP2 EMIS experience in terms of what can be useful for other USAID EMISprojects that focus on EMIS or have an EMIS component.

What worked

- "This year's data" was produced "this year" (in 2005, 2006, and 2007) with the help of outside TA.
- Donors, for the most part, stopped collecting their own data and came to rely on the Ministry of Education's education statistics as THE source of education data.
- High EMIS coverage rates were achieved, exceeding 98.5% for primary education.
- Malawi GLOBAL ED*ASSIST software enabled the production of more than 100 reports on almost every section included in the EMIS questionnaire.
- The EMIS software and data sets had been installed on almost every computer in the Ministry of Education.
- The Ministry of Education had the capability to produce reports according to individual office needs.

What did not work

- It was not possible to achieve sustainability, without ongoing assistance; by the end of EQUIP2, the MOE could not finance support for the EMIS.
- Designing the project yearly with unclear funding for future years makes it difficult to engage in longer term activities, such as training and planning.
- Continuity is more difficult with constant changes (nearly annually) at the level of the Minister of Education and Permanent Secretary.
- Staff turnover in the EMIS unit and other units related to EMIS is an endemic problem: people get trained and then they leave the MOE for higher paying jobs in the private sector.
- MOE staff had limited capability to interpret/use data without external donor assistance.

Valuable insights from interviewees

On the effect of frequent turnover at senior levels:

The MOE was weak in terms of human resource capacity and financial resources. In a two-year period they had four Ministers and four Permanent Secretaries. It is hard to get decision-making done with so much staff turnover. They are barely figuring out the job when they are transferred elsewhere. (Thomas Le Blanc, USAID/Malawi education team leader)

On conditions for achieving sustainability:

You need to view EMIS as a three to five year technical commitment – and a longer commitment for changing the internal culture. Another ten years would not be unheard of. It needs to be placed, institutionally, with a person of leadership capacity who is being held accountable for implementation, usually the Planning Director. And, the resources—at all levels (village, county, District, and National) need to be appropriate. Usually on larger donor efforts, the center gets the funds, and they are reduced as you go "lower" in the system. (Kurt D. Moses, FHI 360 EMIS specialist).

C. MALAWI: EDUCATION DECENTRALIZATION SUPPORT ACTIVITY

Time frame: February 20, 2009–February 28, 2012

Funding level: $11,559,643

The information for this review is drawn from interviews with eight individuals closely associated with the EQUIP2 Malawi EDSA Associate Award, including USAID/ staff, EQUIP2 staff in Malawi and from EDC and AED in the United States, and a former Ministry of Education employee. It provides the basis for the lessons learned and insights found in Section II of this report.

This case is divided into the following sections: (1) Malawi context, (2) EDSA project design, (3) EDSA EMIS project implementation, (4) EDSA EMIS successes and challenges (as seen by the eight interviewees), (5) monitoring and evaluation. The last section (6) reflects on the experience in terms of what can be useful for USAID education officers who design and oversee the implementation, monitoring, and evaluation of EMIS projects. It is divided into three sub-sections: what worked, what didn't work, and valuable insights.

This review is written in story form (e.g., what was the context and how did it influence the design, what influenced implementation and what was learned in terms of successes and challenges, what can be learned from monitoring and evaluation).

1. Malawi context

Malawi national and education context

Gaining independence from Britain in 1964, Malawi spent three decades under a one-party rule but has been a multi-party democracy since 1994 (CIA World Factbook). Malawi held parliamentary and presidential elections in May 2009, which were meant to influence both the opportunity for policy dialogue and implementation as well as leadership. Malawi is broken up into 28 districts, and there exists a great urban-rural divide, even though only 19% of the population lives in urban areas (CIA World Factbook). Malawi is ranked 153 of 169 countries in the United Nations Human Development Index (2010), ranking in the "low human development" category.

Malawi grapples with one of the worst situations of HIV/AIDS, which is prevalent in about 12% of adults (CIA World Factbook). The HIV/AIDS pandemic has aggravated the overall human resource situation, disproportionately affecting teachers, who represent one of the largest networks of civil servants in the country and disproportionately high numbers of children. Among school-aged children

6 to 14 years, there are about 14% classified as orphans and vulnerable children), over half of which are estimated to be AIDS orphans. Other problems include an increasing population, increasing pressure on agricultural lands, and significant levels of corruption.

In responding to the 1990 and 2000 EFA commitments, Malawi's student enrollment has increased dramatically, but has led to substantial negative effects to the quality of education. At project start-up, primary gross enrollments were at 120% with over 3.3 million students enrolled in just over 5,200 schools, taught by 43,000 teachers. High student–teacher ratio and the quality of education vary substantially between rural and urban areas. In 2007, the student–teacher ratio was 43:1 in urban areas but 84:1 in rural areas. The low number of qualified teachers compounds the situation. In trying to counteract these problems in education, MOE leadership has begun taking strides towards a Sector Wide Approach (SWAp), as seen most explicitly through progress and efforts in finalizing its National Education Sector Plan (NESP). Education expenditure in 2003 was 5.8% of GDP (CIA World Factbook).

Status of Malawi's Education Management Information Systems (EMIS) at the time of the EDSA design

When EDSA was being designed, a prior EQUIP2 project focusing on EMIS was winding down. USAID and AED were successful in taking a fragmented EMIS system where each donor collected information to track of its own activities and converted it to a centralized system in the MOE—the only official and authorized education data source for all Malawi. By 2008 when the project ended, coverage rates for primary schools exceeded 98.5% each year. Education statistics for 2005, 2006, and 2007 were released the same year in November of 2005, 2006, and 2007 respectively. The main EMIS office at the MOE had been refurbished with new servers, workstations, and EMIS software and data sets had been installed on almost every MOE computer. The MOE could produce reports according to individual office needs. Numerous trainings on EMIS had been organized and delivered to primary education advisors and other MOE officials and intensive training had been organized for district staff. Twenty-four out of 33 district EMIS offices were directly involved in data collection, entry, and production.

However, as the project drew to a close, a number of challenges remained. High MOE senior staff turnover (four Ministers of Education and four Permanent Secretaries in five years) posed a challenge for EMIS continuity. MOE senior management made little use of the reports EMIS generated for policy dialogue, analysis, and management of schools. With frequent changes in Malawi EMIS staff, the day-to-day operations of the MOE EMIS came to depend inordinately on the EQUIP2-funded EMIS advisor. Most district staff were either unqualified or had limited capacity to take on the demands of the EMIS activities. The EQUIP

2 project had been responsible for financing all EMIS activities. By the end of the project the MOE could not finance support for the EMIS. The MOE still lacked the qualified staff to properly support the EMIS system independently of EQUIP2. Five years at funding levels provided by USAID was not enough time to fully institutionalize the EMIS within the MOE and create the capability in all districts to input data for the EMIS and use the EMIS results for decision making.

2. Design of the EDSA project

Design context and process

EDSA, a follow on to the EQUIP2 EMIS project referred to above was designed in late 2008 in close collaboration with a Ministry of Education technical working group on governance and management. There were consultations with the Director of Planning, JICA, and GTZ. Over a series of technical working group meetings, USAID came up with framework for the EDSA RFA. Clear from the start was that EDSA would work as a discrete project in a highly collaborative fashion under the upcoming education SWAp.

During the EDSA design USAID/Malawi recognized that further assistance was needed to strengthen and sustain the Ministry of Education's central EMIS but decided to focus on six pilot districts that the new project would be work in. USAID understood at the time that UNICEF would provide assistance to ensure the strengthening and continuity of the central EMIS.

EDSA purpose/objectives and approach

The purpose of EDSA as stated in the USAID/Malawi RFA was to "Strengthen the decentralization implementation at the Ministry of Education headquarters, district and school levels to support system progress in attaining National Education Sector Plan 2008–2018 goals." EMIS was included as a set of illustrative activities; however, EMIS was not mentioned either in the purpose or as a component.

EDSA was designed to provide support at three levels, each defined as a separate component:

1. Strengthened policy and strategy articulation, interpretation, and implementation (policy support)
2. Improved decentralization implementation, planning, and data utilization for informed decision making (decentralization and planning)
3. Enhanced role and participation of communities in monitoring education service delivery (schools and community)

The first reference to EMIS in the EDSA RFA appears under the description of Component 2 (decentralization and planning) as follows:

> *The current EMIS system is one of the few EMIS systems in any developing country to provide "this year's data this year." This activity should feature an eventual phase out of EMIS support from USAID at the central, headquarters levels. The focus should be to strengthen district-to-school EMIS capacity and use with strong coherence and input to sector M&E frameworks and the NESP targets and indicators, a weakness in the previous EMIS decentralization effort. Phase -out activities will comprise limited central TA technical assistance at the central level for EMIS, as well as completing the EMIS -oriented decentralization activities begun under the EMIS support activity (e.g., equipment and initial training to 10 remaining districts).*
>
> *Illustrative decentralized EMIS support activities related to decentralized EMIS support include:*
>
> - *Build on and improve the EMIS accomplishments to date.*
> - *Ensure that EMIS is linked to sector M&E and NESP targets and indicators.*
> - *Review and assess the capacity of central-, division-, district-, and school -level information managers and decision makers to analyze and use data.*
> - *Bolster the ability and capacity of division; district and school level information managers to analyze and utilize use data better and more explicitly inform planning processes.*
> - *Coordinate with and support efforts to link the tTeacher EMIS and the national EMIS.*
>
> *Illustrative EMIS indicators related to EMIS:*
>
> - *Strengthened district planning systems and linkages to zonal and school plans and improvements, including equipment, capacity, and skills support to decentralized EMIS activities in 10 districts.*
> - *Guidance developed and provided for improved EMIS/information production, analysis, and management and use at decentralized levels.*

Assumptions underlying the design of EDSA

The EDSA RFA did not specifically articulate any assumptions underlying project design. However, the USDH education team leader who played a significant role in preparing the RFA, articulated the following assumptions. None focused on EMIS:

1. The Ministry of Education would continue with its reform agenda, National Education Sector Plan (NESP), and sector approach to implementing the plan.

2. The Ministry of Local Government and Local Development would continue to roll out its decentralization policy.

3. Communities would continue the momentum and that an approach to help communities to link up to larger policies so momentum would continue.

Decisions around time frame and funding

The rationale for $11.6 million in funding for EDSA, according to the education team leader who helped design the RFA, was based on a combination of analyses, the best guess of those who designed EDSA, and the education funding that the USAID/Malawi mission anticipated it would receive from USAID/Washington. Drawn from the National Education Sector Plan (NESP), the Education Sector Implementation Plan (ESIP) provided the rationale for the EDSA three-year time frame (ESIP is the GOM four-year sector program that was in its first year of implementation when EDSA was designed).

Provisions for sustainability

Sustainability was implicitly a major component of the EDSA design. The notion was that USAID should build on the body of support and activities that had come before, be responsive to key priorities in the MOE's plans and minimize doing anything outside of those plans. Capacity building and capacity transfer under the Associate Award were key. This included individual training, mentoring, coaching, and assistance with networking.

Per Marisol Pérez, the USAID/Malawi education team leader, sustainability went beyond individuals: "It's not just this person. What about the department and/or the unit? In EDSA part of the capacity building approach is the ability to solidify relationships, patterns of meetings, operational guidelines, habits. We asked and continually ask throughout implementation of this activity, 'How do people use information and knowledge?' 'How do people use information and how do they build on each other?'"

3. Implementing the Malawi EDSA Associate Award

Design choices that are guiding EDSA implementation

There were, as can be seen from the contents of the previous section, a number of design choices built into EDSA that are guiding its current implementation:

- That support for decentralization would be most effective if USAID took the conscious decision to operate simultaneously at the central, district, and school/community level.
- That, with limited resources and time, EDSA would not work with all districts and divisions but instead 6 out of 28 districts located in two of Malawi's 6 education divisions.
- That the Ministry of Education would continue with its reform agenda, NESP and the SWAp approach to implementing planning and that USAID would support these agendas and approaches.
- That to do the above, USAID needs to be responsive to Ministry of Education requests as well as collaborate closely with other donors.
- That UNICEF would pick up where USAID left off, under a prior EQUIP2 project, in supporting the institutionalization of the EMIS system at the central Ministry of Education level.
- That EDSA would be the "seed" that germinates interest and successfully validates innovative approaches to decentralization, with this "germination" other donors would ideally pick up and expand the decentralization support provided under EDSA.
- That EDSA would support the Ministry of Local Government and Local Development in rolling out its decentralization policy.
- That communities would continue with momentum that had already been built to support decentralization and that an approach to help communities to link up to larger policies would be carried out under EDSA so that this momentum would continue.
- That civil society had an important role to play in supporting EDSA implementation, among others, funds for the schools would be channeled through NGOs.
- That an important part of the project would be the creation of a feedback loop; information to be collected through monitoring and evaluation would feed back into joint project decisions made by USAID, EQUIP, and the Ministry of Education.
- That building in sustainability was fundamental.

Design choice #5 (that UNICEF would pick up where USAID left off, under a prior EQUIP2 project, in supporting the institutionalization of the EMIS system at the central Ministry of Education level) is the only design choice that refers specifically to EMIS. This design choice has not been borne out. UNICEF has not provided the anticipated assistance to the central EMIS, and the central Ministry of Education (now no longer with outside technical assistance to ensure that "this year's data is provided this year") is now several months behind in issuing yearly data. This, among others, is producing challenges at the district level under EDSA, where current year national data are required in order for the decision making tool and the school assessment charts being prepared with EDSA assistance to be used effectively.

Implementation approach/progress

At the time of drafting this case study, EDSA was a year and three quarters into implementation of a three-year project. AED implemented the project under the EQUIP2 mechanism represented by the Chief of Party who reports to AED. A sub-grant with the Research Triangle Institute provides TA for decentralization and EMIS through three short-term RTI consultants who visit Malawi periodically to design and oversee specific activities. RTI hired two Malawians who carry out decentralization and EMIS activities on the ground.

Implementation activities to date have been highly collaborative. The USAID staff enjoy a very close and collegial working relationship with the EQUIP2 COP. All three may frequently be found at key MOE meetings. In addition, the EQUIP2 COP (with the support of USAID/Malawi staff) works very closely with other key donors involved in implementation.

The EMIS project has made a promising start in setting the base for strengthening the use of information already being collected from the schools both at the school and the district level. The Malawian EMIS advisor has been able to identify the information that the districts collect from the schools and what they use it for strengthening their capacity to collect the information and use it efficiently.

With assistance from EQUIP2 technical advisors, a Decision Making Tool is being developed that calculates data being tracked nationally and compares it with data being collected in the districts and makes comparisons possible among schools at the district level. Once it's ready, the Decision Making Tool will identify the number of teachers to send to each school based on student enrollments and the number of teachers to achieve equity in the distribution of limited resources. With delays in generating data at the national level, however, it is difficult to complete the information required to generate the Tool on a timely basis. (This critical interdependence was often mentioned during the prior AED-led EMIS effort.)

EDSA technical advisors also help to generate School Assessment Charts so schools can carry out their own planning. The Chart is one page with a set of graphs printed on either side. The first page compares the school to other schools within the same zone based on six indicators. The second page has the same six indicators but looks at trends in the school over time. When this study was carried out, school staff were beginning to receive training to use the Charts.

Decision Support Tool and the School Assessment Chart still need to be implemented. One person interviewed pointed out that the challenge is creating a widespread demand at all levels (civil society, elected officials, parents, communities, chiefs, government departments etc) to use the information available through both.

Adequacy of time frame and budget, effectiveness in building sustainability
It is premature to assess whether EDSA's time frame and budget are adequate. Funding levels appear to be sufficient for the three-year project. However, as one interviewee pointed out, three years are not sufficient to provide intensive and prolonged engagement. Another observed that for the "actual changes we have to go through not just the Ministry of Education system but the government of Malawi system for policies to be changed and implemented. There are aspects not up to the project. We can't say with assurance they will adopt them."

When queried on the three-year time frame given what the project would like to accomplish, the USAID education team leader acknowledged that during the design phase, she and her team, in consultation with key MOE counterparts, determined that a three-year activity would be but a start. She indicated that USAID had begun to think about designing a follow-on activity focusing on decentralization, contingent on what would be accomplished and learned during the rollout of this activity. It is premature to comment on the effectiveness of EDSA in building sustainability.

Key outcomes
EDSA and its project outcomes have not yet been completed. However, a recent EDSA quarterly report provided a snapshot of accomplishments for the second quarter of 2010 (April–June of 2010).

Improved decentralization implementation, planning and data utilization for informed decision making

- Trial run of School Assessment Chart in rural and urban districts
- Revised Decision Support Tool (version 2)
- Gap assessment of completed Data Entry Windows/DSTs among EDSA districts in terms of data entered to date; all six districts reviewed 2009 EMIS data to make certain Decision Support Tools were updated with correct information
- Reviewed monthly data collection forms (from schools) and worked with the EMIS Unit to revise accordingly; streamlining the data collection forms and timetable could improve reporting efficiency, accuracy, and use for schools and districts
- Demonstrated to district education managers how Double-Shifting Guidelines may be implemented using the Decision Support Tool.

4. Factors within and outside of USAID and EQUIP2 control that favored accomplishments and served as deterrents

As part of the EQUIP2 lessons learned exercise interviewees were asked to reflect on successes and challenges. The following is a summary.

Factors that were seen as favorable

- Stability of actors within USAID: the USAID/Malawi Mission Director, education team leader, and AOTR who presided over the EDSA design continue up to this point during implementation
- Stability of actors among the EQUIP2 staff (COP, Malawian staff, external short-term assistance)
- Having a Cooperative Agreement that allowed EQUIP2 to work with the MOE when EQUIP2 was developing its proposal; EQUIP2 staff could circulate drafts and get feedback from development partners and the MOE
- Excellent communications between the EQUIP2 COP, USAID/Malawi education staff, and key Ministry of Education staff
- A Mission Director who supports the project's working within a SWAp environment
- USAID/Malawi's willingness to be flexible, adaptable
- Tying the national and local levels through the feedback loop; EDSA lessons learned in six districts for system refinement and for developing operation guidance manuals.

Challenges

- Limitations in staffing at the Ministry of Education: the MOE has many vacancies; the very capable Director of Planning, who assisted in designing EDSA, left the MOE
- USAID did not foresee the catalytic funding application to the Fast Track Initiative that the MOE had to set aside time to prepare, which took a year and detracted from other MOE activities including implementing EDSA nationally
- Significant delay in approval of the districts that the project would work in; due to presidential elections there was a delay in approval of having grants go through district education officers
- Delays on the USAID side and at AED in getting the same approvals
- Resistance to decentralization: convincing the government to devolve authority, control, and responsibilities for making decisions on finance to local levels that involves changing a culture
- USAID systems need to be made more conducive to working with a SWAp. USAID mechanisms, such as PMP indicators, are still rooted in a direct implementation approach

- Convincing MOE counterparts that, although USAID is committed to supporting MOE activities, USAID has time lines and targets that it must meet
- Concern that project technical assistance may be doing some of the work that should be done by MOE staff
- The Decision Support Tool is Excel based; in most the places where the MOE works there are few computers; electricity is not constant
- Lack of clarity on how the central EMIS system will fare without external assistance; delays in producing the annual statistical report are already having negative repercussions on producing a timely school-based Decision Making Tool.

5. EDSA Performance Monitoring and Research Plan (PMRP)

In May of 2009 EQUIP2 presented a Performance Monitoring and Research Plan (PMRP) to USAID/Malawi. The PMRP has two assumptions about how monitoring and evaluation will be carried out: (1) EDSA will follow the MOE logical framework approach, as outlined in the NESP Monitoring and Evaluation Plan; and (2) EDSA will align its output, outcome, and impact targets with those of the MOE, where applicable.

The PMRP combines the collection of qualitative and quantitative data. It also contains several studies that nourish the EDSA feedback loop, thus ensuring that data collected are used to reflect on project progress, inform key MOE and other actors on key issues, and be used to make adjustments in project implementation. In addition, the PMRP anticipates that evaluations under EDSA will focus on how the information and feedback loop contributes to national policy dialogue and how information is used for district planning and budgeting.

The PMRP includes 21 indicators as listed below. Some are context indicators; others are for reporting to USAID/Washington under different funding streams (basic education, PEPFAR). Three (highlighted in italics and bold) relate to EMIS activities:

1. Extent to which decentralization of specific processes/responsibilities correlate with improvements in quality and learning at the school
2. BEF: Number of learners enrolled in USG-supported primary schools in EDSA districts
3. BEF: Drop-out rate in EDSA districts
4. BEF: Completion rates by primary schools (PSCLE)
5. PEPFAR: Number of eligible adults and children provided with a minimum of one care service
6. PEPFAR: Number of eligible children with education and/or vocational training

7. PEPFAR: Quality of life for OVC in learning environment
8. IR 1: Effectiveness of AED policy/dialogue feedback loop to contribute to national policy dialogue
9. IR 2: Use of information for planning and budgeting at the district level
10. IR 3: Percentage of communities active in school decision making
11. BEF: Number of laws, policies, regulations, or guidelines developed or modified to improve equitable access to or the quality of education services
12. BEF: Number of policy briefing papers developed and accepted by MOE/CSCQBE which contribute to articulation of policy framework
13. BEF: Number of host country institutions with improved management information systems as a result of USG assistance
14. BEF: Number of host country institutions that have used USG-assisted MIS system information to inform administrative/management decisions
15. BEF: Number of people trained in other strategic information management with USG assistance
16. PEPFAR: Number of District Education Plans which contain an HIV/AIDS component
17. BEF: Number of Parent-Teacher Associations or similar "school" governance structures supported
18. BEF: Number of SIP small grants implemented
19. PEPFAR: Number of OVC grants disbursed
20. PEPFAR: Number of T'LIPO members given training to build their organizational and HIV/AIDS and OVC skills.
21. BEF and PEPFAR: Assessment of gender lens applied to ensure gender-sensitive approaches and strategies are integrated into all activities

6. Reflecting on the Malawi EQUIP2 EDSA experience in terms of what can be useful for other USAID EMIS projects that focus on EMIS or have an EMIS component.

What has worked thus far

- The Decision Support Tool and the School Assessment Charts appears to hold promise for providing useful information to district education staff and schools for planning purposes

What has not worked thus far

- Three years appears to be an insufficient to accomplish project objectives, including those related to district EMIS support.
- Lack of central support for EMIS appears to be having negative repercussions for EMIS activities at the district level.

- Absent a compelling administrative structure that ties funds to receipt of both information and systemic improvement, the role/importance of information for education is diminished.

Valuable insights from interviewees

On utilization of EMIS data:

> *EMIS data utilization can be looked functionally at least at two levels: at the central level and at the district and sub district levels including the school. Given that information needs as you move from the school to National level are not exactly the same, there is a need for the system to factor that in order to meet the core needs at each level hence increase utilization. Processed data products such as charts (districts charts, zone charts, school charts, time series analyses, school comparisons, etc.) need to be available at these levels in modes that render them both relevant and easy to use for stakeholder at each respective level.*
>
> *If the products were made available, a culture of data use and associated skills will need strengthening. The challenges include literacy, particularly at community level in rural schools and at District level; inevitable political elements in the Local Councils. Pro activeness will be important for education managers and Civil Society to champion data utilization culture through understanding and utilizing leverages and opportunities within the system in order for the sector to make progress. The use of the processed EMIS data from the point of generation (at the school) onwards besides improving management, also leads to improved data quality in the system as data providers will appreciate the value or use of quality data better.* (Charles Matemba, EQUIP2 EMIS advisor)

On capacity building:

*We are looking at capacity building not just as training (on Excel, GLOBAL ED*ASSIST). Training is a first step. We are also looking at capacity transfer, and addressing critical questions such as, "how do you know what capacity you are building when you don't have an inventory of where people are, so you know you are building their knowledge and skills?" You can conduct training on content, but you need to accompany the people trained, sit there with them, and go through the process with them. You need to mentor them, coach them, helping them network and seek out relevant resources. You need to ask yourself who your end user is. Usually is not just one person. What about the department and/or the unit?* (Marisol Pérez, USAID/Malawi Education Team Leader)

D. ZAMBIA: SUPPORT TO THE MINISTRY OF EDUCATION STRATEGIC PLAN IN IMPROVING INFORMATION AND STRENGTHENING POLICY IMPLEMENTATION

Time frame: March 1, 2004–March 30, 2011

Funding level: Initial: $13,973,991; Final: $26,473,991

The information for this review is drawn from interviews with eight individuals closely associated with the Improving Information and Strengthening Policy Implementation EQUIP2 Associate Award, including USAID/education staff, the EQUIP2 Chief of Party and technical staff in Zambia, and the AED home office director, and two former Permanent Secretaries. It provides the basis for the lessons learned found in Section II of this report (along with insights from state-of-the-art research on EMIS).

This case is divided into the following sections: (1) Zambia context, (2) EQUIP2 Zambia project design, (3) project implementation, (4) successes and challenges (as seen by the eight interviewees), (5) monitoring and evaluation, and (6) reflections on what can be useful for USAID education officers who design and oversee the implementation, monitoring, and evaluation of EMIS. It is divided into four sub-sections: what worked, what didn't work, interesting strategies, and valuable insights.

This review was written in story form (e.g., what was the context and how did it influence the design, what influenced implementation and what was learned in terms of successes and challenges, what can be learned from monitoring and evaluation).

1. Context

Zambia national and education context

The Republic of Zambia is located in southeastern Africa. It is bordered by Malawi and Mozambique to the east, Zimbabwe and Botswana to the south, Angola to the west, and The People's Republic of Congo and Tanzania to the north. Zambia went "from being a major copper producer and potentially one of the continent's richest countries at independence in 1964 to one of the world's poorest" (BBC Country Profile). Politically, it changed from a colonial government into an era of one-party rule lasting 27 years. A multi-party system emerged in the early 1990s (BBC Country Profile). Even though the late president, Levy Mwanawasa, won respect for his anti-corruption drive, the current government under President Rupiah Banda has been unable to fully curb political and economic problems. The collapse

of world copper prices in 1975, mismanagement, debt, and disease have resulted in negative effects on the economy (BBC Country Profile).

Zambia rates 150 of 169, on in the low human development category in the UNDP's Human Development Index (2010). Adult literacy is 71% (World Bank, 2008). With a population consisting of more than 70 ethnic groups, as well as tens of thousands of refugees from the Democratic Republic of Congo (DRC) and Angola, Zambia faces multi-faceted population concerns (BBC Country Profile). Not only is life expectancy less than 39 years of age, but Zambia also has the seventh highest prevalence of HIV/AIDs among its adult population (CIA World Factbook).

Zambia's weak economy has led to widespread poverty across the country and stagnated rural development. This poverty visibly affects the education and health sectors. In particular, limited Ministry of Education financial resources (1.3% of GDP in 2009 for education, World Bank statistics) have had negative impacts on girls' education. High rates of net primary enrollment (91% in 2009, World Bank statistics) have led to detrimental effects in the quality of education, as student–teacher ratios are up to 99:1 in some districts. The HIV/AIDS pandemic exacerbates the problem of quality of education; many teachers leave or die each year largely due to HIV and AIDS and many students are orphaned or affected.

In 2003, the MOE began implementing an integrated sector-wide approach (SWAp) utilizing three funding channels: direct sector support (pool funding), designated support funds, and support funds from existing bilateral agreements with donors who may not be signatory partners with the MOE. Under the SWAp several key joint MOE–cooperating partner committees meet regularly to review MOE programs, plans, budgets, progress, and expenditures, and to reach joint MOE–cooperating partner decisions.

Status of Education Management Information Systems (EMIS) at the time of the EQUIP2 Zambia design

A needs assessment conducted in 1999 revealed that most of the MOE's existing information systems were not in electronic form. The few computerized systems that existed provided only department-specific information, with significant duplication of effort across units, which tended to undercut the integrity and consistency of the information systems. Some systems were based on incomplete or outdated data sets. Most databases were centrally located with no links to local-level systems. Personnel lacked familiarity with database management; record-keeping and general management capacities were limited. No standards for computer software and hardware existed.

In 2001, USAID/Zambia, through a contract with AED, initiated a program to strengthen the MOE's EMIS. Between 2001 and early 2004, it was possible to integrate the previous heterogeneous systems to create an effective, efficient, and sustainable system at the MOE. This program had five focus areas: (1) EMIS development (training, data collection, data analysis, hardware, software, and TA); (2) capacity building (training, development of demand for information, business processes, and technical assistance); (3) assessment; (4) community data collection and use (leverage of funding and collaboration with implementation partners); and (5) provision of data and reports for semiannual and "on-demand" monitoring.

When the project began in March 2004, the EMIS was working in the MOE's headquarters, (both stand-alone and on the headquarters LAN), in two pilot provinces (Southern and Eastern), and in all seventeen districts within the pilot provinces. The MOE was able to complete its annual education statistics report the same year the school census data were collected.

2. Design of the Zambia EQUIP2 project

Design context and process

Relatively new to working in education in Zambia, USAID/Zambia found itself designing what became the EQUIP2 Associate Award and two other education programs (CHANGES, with AIR, on school health and nutrition and QUESTT, with EDC, an interactive radio instruction program for out of school children) in a SWAp environment. Unable to participate with budget support, as the other major donors were doing, USAID was initially greeted with suspicion and resistance both on the part of other major donors and the MOE. A major challenge in the early design was to find a way to be an accepted actor in this environment.

Unlike the other two stand-alone USAID-funded education programs, the approach in designing the project was to support, respond to, and augment, not lead or interfere with, the MOE's plans and priorities in keeping with the intents of the SWAp. It was envisioned that, "The proposed implementation of this project will move away from traditional supply-driven, service-delivery models of project support to a demand-driven model that enhances the ability of the Ministry and its professional staff to lead, to grow, and to prosper as they achieve their professional goals and Zambia's national aspirations for its educational system."[11]

The Associate Award built on and continued progress made with EMIS under a prior contract with AED. In addition, USAID/Zambia built in two additional components: policy reform and decentralization.

11 EQUIP2 Zambia Associate Award, dated March 11, 2004.

Associate Award objectives/purposes[12]

The purpose of the Associate Award was to, "Improve information for efficient resource management and strengthen education policy implementation."The intent was to "extend EMIS to all Districts within the country, support decentralization through empowerment of the Districts, support policy implementation through enhanced monitoring at multiple levels and support evaluation and monitoring." In addition it was envisioned that the project would also improve access, gender equity, and quality in basic education; improve quality and efficiency in secondary and tertiary education; develop relevant skills and enhanced learning achievement by all learners; decentralize decision making, procurement, and financial management to districts and schools; and management/mitigation of the impact of HIV/AIDS.

EMIS implementation strategy

When the EQUIP2 Associate Award was designed, it was envisioned that the activities in each area would share a common goal—working with and through Ministry staff, enhance the MOE's capacity to utilize education information effectively, decentralize administration of education systems, and successfully implement relevant policy, programs, and plans. Rather than prescribe a long list of intended activities, the proposed approach emphasized the MOE's leadership in planning its future and provided flexibility for assisting the MOE to carry out its priority activities and tasks.

Also envisioned was that in some areas the MOE may choose to assist all provincial and district offices. At the discretion of the MOE, for example, the project could deploy local technical advisors to support financial management or EMIS at all provincial offices, or upgrade the information and communications technology (ICT) infrastructure at all provincial and district offices to a minimum standard. In other areas the Ministry may choose to focus project resources on selected schools, districts, or provinces to create and test models that the MOE can later take to scale nationally. All activities will provide the vehicle through which a strategy to develop capacity would be realized.

Assumptions and premises

The EQUIP2 Associate Award did not include any specific assumptions. However, Kent Noel, the USAID/Zambia education team leader at the time who was responsible for designing the EQUIP2 identified four: (1) All the donors would be strongly supporting the MOE and the SWAp; (2) USAID would continue to support education in Zambia at the same or a higher level of effort; (3) The Zambian government would be stable and continue to work on corruption; and (4) The Zambian government would continue to make an effort to stem the effects of HIV on teachers and students.

12 The information included in this sub-section and those that follow is drawn from the ERP RFA.

Rationale for time frame and budget

When the project was designed, USAID/Zambia selected a five-year time period in keeping with its five-year country strategy. Just under $14,000,000 was budgeted for implementation, reflecting what the mission anticipated would be required to implement the three components and what the USAID/Zambia mission anticipated would be available. However, even at the time of project design, it was clear that flexibility had to be built in to expand activities and increased funding levels as the MOE identified new activities and additional education funds became available from USAID/Washington.

Provisions for sustainability

Sustainability was built in front and center in the Associate Award design as can be seen in the next section of this write up.

3. Implementing of the Zambia EQUIP2 Associate Award

Design choices and assumptions that guided implementation

In preparing the Zambia EQUIP2 RFA, and as is referenced above, USAID made a number of design choices and assumptions that would guide ERP implementation. They included:

1. That all the donors would strongly support the Ministry of Education in the context of the SWAp;
2. That USAID would continue to support education in Zambia at the same or a higher level of effort;
3. That the Zambian government would be stable and continue to work on corruption;
4. That the Zambian government would continue to make an effort to stem the effects of HIV on teachers and students;
5. That EQUIP2 would support the Ministry's priorities, complement its structures, and follow its operational procedures; and
6. That all efforts should enhance the Ministry's human capacity to achieve Zambia's educational aspirations in a timely and efficient manner, be responsive to local and national requirements, thus reflecting a demand-driven focus, and promote long-term sustainability.

With the exception of design choice #3, all of the other design choices were born out in implementation: all donors strongly supported the Ministry of Education and the SWAp (design choice # 1); USAID/Zambia continued to support education in Zambia and in fact increased it level of effort (design choice #2); with USAID's support under the EQUIP2 Associate Award the Zambian government continued to make an effort to stem the effects of HIV on teachers and students (design choice # 4); EQUIP2 supported the Ministry's priorities, complemented

its structures, and followed its operational procedures (design choice # 5); and the EQUIP2 Associate Award focused on enhancing the Ministry's human capacity to achieve Zambia's educational aspirations in a timely and efficient manner by being responsive to local and national requirements (design choice # 5).

In the case of design choice #3 (that the Zambian government would be stable and continued to work on corruption), the government has remained stable. However, insufficient progress has been made in working on corruption witnessed, in the education sector, by a recent decision in 2010 by donors to withhold disbursements to demonstrate their dissatisfaction.

Evolution of the EQUIP2 Zambia Associate Award between 2004 and 2010
Between 2004 and 2006 EQUIP2 Zambia continued to build on progress on EMIS strengthening completed under a prior contract with AED. The project also included policy research, institutional management, continuous assessment, and integrated information management. In addition, in 2005 an HIV/AIDS workplace program was added, using PEPFAR funding. USAID provided a small amount of sector program assistance (SPA). The Associate Award was amended in 2007, with special funding available from USAID/Washington to work on an MOE institutional response to community schools. The Secretariat of Community Schools had closed a year earlier because of charges of corruption, and community schools were not within the purview of the MOE.

Responsibilities were added in 2008 when the MOE and the USAID asked EQUIP2 to 1) build up a school health and nutrition component, 2) design and delivery an education leadership and management course (for primary school principals), 3) design and set up an M&E system for the MOE and stakeholders and agree upon national education indicators, and 4) an electronic human resources information system that would replace the archaic and dysfunctional paper filing system for more than 80,000 employees (including teachers). To widen and deepen the impact and effectiveness of the education system and to reach underperforming schools and districts in a systemic way, in 2009 a provincial advisor component was added to the program strategy.

By showing that EQUIP2 would be an MOE-led and driven project, USAID and AED were able to gain the confidence of the MOE and the other donors. EQUIP2 did not have an independent vision, goal and strategy, but developed its plans and objectives with the MOE. By providing timely and appropriate technical assistance behind the scenes, the project convinced others that it could play a constructive role in supporting the government's priorities and the implementation of the SWAp. EQUIP2's long term technical advisors, who were embedded in the MOE, came to become trusted advisors to Ministry staff and on several occasions assisted other donors with implementation issues they were experiencing in supporting the

SWAp. This was possible because key actors at USAID/Zambia with the support of the Africa Bureau in USAID/Washington committed themselves early on to take a demand-driven approach that responded to the needs of the MOE instead of following a predefined and rigid project implementation plan.

EMIS implementation approach

During project design, stakeholders in the MOE acknowledged the significant progress that had been made with EMIS in a relatively short time under the preceding project, and noted its positive impact on improving planning processes.

The highest priorities for the MOE under EQUIP2 EMIS were to: (a) institutionalize the EMIS in such a way that it promoted demand for policy-relevant data and that the analysis of these data would be used to enhance decision making; (b) develop the MOE's capacity to sustain the system with no or only minimal outside assistance, (c) extend the EMIS system's reach to make it useful as a management and planning, tool (to include linkages with human resources and exams and extend to districts and schools); and (d) increase the system's use by planners and decision makers. "Fundamentally, the EMIS effort needs to shift from a 'supply of information' driven approach, to a 'demand for information' effort."[13]

These priorities were to be accompanied by three implementations strategies as seen below.

Key EMIS implementation strategies

System sustainability was to be improved by simplifying ED*ASSIST, ensuring that technical advisors would have not only counterparts, but also professional teams, with whom to work. By Year 4, implementation responsibilities would be transferred to Zambian MOE staff. After the resident advisors withdrew, the project would continue to provide short-term consulting support as required to extend training and provide troubleshooting.

System extension would help the Ministry broaden the system to link with key areas such as human resources, exams, finance, payroll, and assessment, thereby increasing the system's integration and utility. School mapping through the geographical information system (GIS) was to be extended. The project would deepen the system by strengthening its links down to the district, zonal, and school levels, and incorpor¬ate data on pupil achievement wherever possible.

Enhancing system use required a paradigm shift, on the part of both Ministry personnel and external advisors, from a supply-driven to a demand-driven mode. The focus would be on how planners and managers can best use the information generated by the system. Enhancing system use would also require capacity building among all key decision makers on how such information can increase their professional effectiveness, refine their decision making, increase their ability to consider alternatives, and contribute to higher rates of pupil achievement.

13 Ibid

Strategies for Capacity Building

Capacity building was an integral element of project implementation. However, instead of one strategy for capacity building, many strategies and interventions could help the MOE build the capacity it needed to improve its systems. EQUIP2 would work closely with the MOE to develop strategies and work plans, and select the most appropriate interventions for each area of operation. The following were envisioned as capacity building strategies:

For enhancing organizational resources:

- Needs assessments and skills audits to identify current and future job requirements, determine gaps, and plan for filling such gaps.
- Organizational development (through advisors, consultants, and/or training—particularly those locally based) to enhance the Ministry's capacity to accomplish its objectives and to absorb project inputs.
- Short-term TA (consultants) from Zambia, the region, or elsewhere, to provide specific services or deliverables on a "one-off" basis (or, at least, with a clear exit strategy).
- As an alternative to long-term technical advisors, develop institutional contract (outsourcing) mechanisms to fill gaps in the Ministry's staffing that cannot be filled in other ways, with a clearly defined exit strategy to ensure sustainable capacity after USAID's assistance ends.
- A program of grants to cooperating agencies (possibly community-based organizations or even schools testing new approaches) to support skills development and to reinforce goals such as creating demand for quality or focusing on learner achievement.

For enhancing human resources:

- Systematic mentoring programs to leverage counterpart relationships and ensure skills transfer to entire work teams wherever possible.
- Long-term technical advisors (local, regional, or overseas with preference for local experts where available) to build capacity, share new skills and perspectives, and facilitate the achievement of the Ministry's objectives.
- Overlapping positions, using a long-term advisor temporarily to fill critical posts for which the Ministry does not yet have permanent positions, with a guarantee that such positions will be established and filled within a specified period of time.
- Short-term technical assistance (consultants), whether from Zambia, the region, or elsewhere, to provide specific services or deliverables on a "one-off" basis (or, at least, with a clear exit strategy).
- A program of grants to cooperating agencies (possibly CBOs or even schools testing new approaches) to support skills development and reinforce goals such as creating demand for quality or focusing on learner achievement.

- In-country training to meet clearly specified requirements at the central, provincial, district, or zonal levels.
- Study tours and short courses to meet clearly identified needs, within Zambia, elsewhere in the region, or overseas.
- Diploma and degree courses to meet identified needs, also within Zambia, elsewhere in the region, or overseas.

For enhancing equipment and ICT resources:

- Needs assessments and commodity audits to identify current and future equipment requirements, determine gaps, and plan for filling such gaps.
- Procurement of equipment and commodities. For example, the MOE could use project funds to bring the ICT systems at all provincial and district offices to a minimum standard.

Adequacy of time frame and budget

In keeping with an MOE-led process, and as was anticipated when the project was designed, the EQUIP2 Associate Award evolved over time. Activity areas increased[14] and as additional USAID education funding became available, the life of project funding nearly doubled from $ $13,973,991 to $ 26,473,991. The implementation period was subsequently extended from September 30, 2008 to March 31, 2011.

When asked whether the time frame and funding were appropriate, all interviewees agreed that the funding was appropriate. However, concern was expressed that to embed the EMIS thoroughly in the Ministry of Education would require three additional years.

Effectiveness in building sustainability under EMIS

By all accounts, the EQUIP2 Zambia Associate Award made significant strides in building sustainability under the EMIS component.

Sri Pererra, a long-term advisor who was in charge of the EMIS component for four years, pointed to four important approaches that have contributed to sustainability with the EMIS. They include: (1) sitting down together and solving problems, by being a part of a team learning from one another; (2) raising the bar of expectations, creating an environment where all stakeholders expected a new level of productivity/quality; (3) simplify, for example, by establishing a database with predefined reports data use was simplified, or by developing programmed

14 By 2010 there were eleven components, up from three when the Associate Award was designed: (1) Policy and Research; (2) Institutional Development and Management; (3) Monitoring and Evaluation; (4) Education Leadership and Management; (5) Continuous Assessment; (6) Provincial Activities; (7) Integrated Information Management (comprising of EMIS, HRIS and Bursaries Systems); (8) ICT Infrastructure and Network; (9) School Health and Nutrition; (10) HIV/AIDS Workplace Programme; and (11) Project Management and Administration

interfaces to import and manage data, the system was easier to manage; and (4) through the Associate Award, hiring people and paying them with the intent that they would later be absorbed by the Ministry of Education.

Kurt Moses, AED/Washington home office technical advisor for EMIS activities, adds,

> *Increasingly, we are seeing "embedding or decentralizing of information responsibility" to districts and provinces as a way to dramatically increase sustainability. For one, they tend to not have as much personnel turnover as the Head Office, and they are often more accountable because they are closer to the schools and the actual "educational action." Their work can be seen and assessed by many. As importantly, you multiply the talent pool when you involve multiple districts and counties—this means that you can identify and nurture talent for the whole system—and this often breeds "power users" who become a "horizontal" resource for other districts and counties. This tends to strengthen the whole system. In addition, we have gradually Zambianized the project. We have a Zambian Chief of Party, three of the long terms advisors are Zambians.*

However, there have also been blocks to sustainability as they relate to activities carried out in support of EMIS:

- Keeping the level of skills needed in MOE personnel: good people tend to move on, those with less capacity tend to remain;
- The MOE has not had control over its staff; they are named either by the Ministry of Finance or the President's Office. As a result, there have been vacant positions for the whole time of the project
- A continuing challenge is accessing and outsourcing changes in technology.

Key Outcomes

A report recently developed under the EQUIP2 Associate Award entitled, Strengthening the Capacity of the Ministry of Education to Reach National and International Goals, The Story of EQUIP2 Zambia" points to outcomes related to EMIS as of September, 2010 when the report was prepared. These outcomes are listed below:

- To strengthen the sense of ownership and responsibility of the Ministry of Education, the EQUIP2 project reduced its input in the day-to-day running of the ED*ASSIST system. Although this resulted in some delay in the production of the Education Statistical Bulletin, it showed what steps must be taken to ensure sustainability of the EMIS.
- The Ministry of Education invests its own money in paying the Internet bill, procures its new computers, and replaces old ones with its own budget.

- In line with the long-term goals in the development of the EMIS, the district education office instead of the provincial education office captured the 2010 Annual Statistical Compilation. Initial indications show that data were more accurate, more comprehensive, and with a sense of local ownership.
- There is less questioning of the quality of data.
- Now Ministry staff at different levels is asking for particular kinds of training. Capacity building is become more demand-driven.
- MOE staff from different levels are actively giving feedback on how to improve the EMIS.
- To provide more timely data, a set of tools have been developed to collect data monthly, per term, and annually. The Lusaka Province is selected to run the pilot.
- The EMIS is being integrated with the Payroll and Establishment Control System (PMEC) so that teachers and schools funded by MOE can be identified and crosschecked. For example the monthly staff returns are being tested to match the payroll and provide information to investigate disparities.
- The ownership of data entry and utilization has increasingly passed down to provinces and districts. Now provinces and districts have ideas on how to improve data collection, entry, and use.

Equally significant are the ways in which the EMIS has been used for routine day-to-day management at the MOE and as input for policy:

- Ministry of Education staff use email and Internet to access data and research, plan and convene meetings.
- The cooperating partners, the Ministry of Finance, and MOE officers are now looking at district data, not just national data.
- EMIS data have been used to monitor performance effectiveness of the MOE in achieving goals through the nationally agreed-upon PAF (Performance Action Framework).
- During and after the 2008 Joint Annual Review, civil society organizations contacted the MOE information unit, wanting numbers and data to put into their presentation (whereas in previous years they were constantly questioning the validity and timeliness of that data).
- ZANEC, the umbrella organization of NGOS and civil society organizations working in education, is using the EMIS data provided by the MOE as part of its analysis and presentation.
- Stakeholders, within and outside the MOE, identify what figures and information they really need from the EMIS, and how they want it packaged.
- In teacher recruitment, the project created a model that looked at every school in the country, teachers and pupils, and the total number that could be hired. The project showed how to bring up the worst ratios up to 75, which schools

should be targeted, and how many teachers for each district would be needed to bring the ratio to a uniform standard. This was accepted.
- EMIS data shows that the MOE has achieved the net enrollment ratio and bursary goals; but that it did not achieve the target student–teacher ratio at the district level, nor the Gender Parity Index.
- EMIS data are showing that the MOE deployed enough teachers, however attrition is getting worse. This has caused a shift of stakeholder attention from recruitment to attrition in those areas, and to see what conditions, incentives, and policies will retain teachers in underserved areas.
- The MOE and EQUIP2 District Profile Strategy has been initiated to provide more data and analysis for district and school-based solutions. Rather than thinking that one national strategy or response for broader problems will address the diverse range of causes, the National Performance Framework will try to bring the dialogue and search for specific solutions to the district and school level.

4. Factors within and outside of EQUIP2 Zambia control that favored project accomplishments and served as deterrents

Interviewees were asked to reflect on elements of the EQUIP2 Zambia Associate Award that they considered successful and on challenges. To avoid duplication this list is limited to topics not addressed in the prior section:

Factors seen as favorable

Specific to EMIS
- Limited turnover in the EMIS unit, the IT manager has been around for the duration of the project.
- Good quality EMIS training, it has been simplified as much as it could be.
- The project prepared easy-to-read/understand district comparisons.

EMIS contributed to
- Education planning documents/decision making.
- The project was able to get the MOE to recognize importance of incorporating community schools in their census – an inclusion that some other countries resist (believing their task is to focus on government schools).
- A decision was made, based on EMIS data, not to provide free secondary education – both because of overall per student cost, and the related factors associated with secondary school attendance.
- More students are qualifying for high school but not getting a place. EMIS data were used to prepare information on student–teacher ratios and class sizes

These data were able to show that schools in some parts of the country had spaces, whereas in other areas the schools couldn't absorb more students.
- Districts use data from the EMIS to prepare their budgets.
- The project is working on a system so that districts can get personnel data on a monthly basis.
- The MOE has more influence on its budget allocation because the Ministry of Finance believes it knows what is going on in its schools.
- The districts EQUIP2 is working in better understand inputs and performance in comparison to other districts.

Related to EMIS
- The first couple years were about building working relationships. The project's biggest input was the quality of the technical advisors and the relationships they built.
- The project was MOE-led and driven, it has responded to MOE needs.
- It was possible to embed staff in the Ministry of Education.
- Over time the project was successful in demonstrating to the MOE and other donors that it could respond to their requests and serve their priority needs by providing TA with no other agenda attached.
- Over time the project earned the trust not just of USAID and the MOE but also of the other key donors.
- The USAID education staff received strong support from senior management (Mission Director, Deputy Director, other superiors) throughout the program for supporting as MOE demand-driven approach.

Specific to EMIS
- Limited turnover in the EMIS unit, the IT manager has been around for the duration of the project.
- Good quality EMIS training, it has been simplified as much as it could be.
- The project prepared easy-to-read/understand district comparisons.

Challenges
- Turnovers in the position of Director of Planning within the Ministry of Education—three during the life of the project.
- In the second year of the project, there were problems accessing funding from USAID due to pipeline issues and uncertainty regarding USAID funding.
- There are problems of Internet connectivity at the district and school level.
- Limited capability among MOE staff to interpret data in the early years of the project.
- The MOE itself is very slow moving, there has been an enormous bureaucratic inertia.

- Extremely low MOE salaries, which has made it difficult to attract qualified personnel.

5. Monitoring and evaluation

Initially the EQUIP2 Zambia M&E plan was a set of PMP indicators, a checklist that was completed at the end of each year. However, in 2007 USAID/Zambia took the decision to add a more robust M&E component to the EQUIP2 project. Designed in close collaboration with MOE directorates and donors who formed a steering committee and now manages the process, this M&E system adopted the MOE's M&E vision and indicators agreed upon by a collaborative process in the education sector. Rather than developing a yearly plan that specified anticipated indicators through the end of the Associate Award in 2010, the decision was taken to develop a framework that listed indicators at the output, process, outcome, and impact levels but leave flexibility for targets to be established annually.

There was one EMIS indicator at the outcome level: "Improved use of Information Management for Efficient Resource Management." "Improved use of information" includes improvements in timeliness (data analyzed and used within a year), validity, reliability (stable and consistent data collection processes over time), precision (acceptable margin of error), integrity (free of manipulation), and utilization of information by decision makers. "Efficient Resource Management" is defined as the MOES's capacity to plan and implement activities based on accurate data.

At the output level, EMIS indicators varied by year depending on the yearly targets established. The following indicators were developed for 2010:[15]

- EMIS information utilized (percent of stakeholders utilizing information statistics at headquarters, district, school, and provincial levels)
- Improved publication and access to EMIS data achieved (percent of stakeholders finding the EMIS useful and timely)
- School used EMIS data to prepare requests for resource, at meetings with community (PTA), and for annual plans (percent of requests quoting evidence from EMIS for justifying requests from district education boards)
- District education boards and schools reduce errors and delays (average number of rejected submissions at MOE headquarters on confirmations and retirements)
- Establishment revised and corrected (establishment submitted to the Management Development Division and approved)
- Pilot STMS completed (pilot provinces selected and implemented)
- STMS rolled out (all schools, colleges and administrative offices use STMS)

15 EQUIP2: 2010 July – September progress report, AED, October, 2010

- Schools, districts, and provinces trained on STMS (number of schools, district education board, provincial education office trained in STMS)
- Human resources information system (HRIS) based on PMEC funding secured (number of human resources modules to be implemented)
- HRIS modules implemented (number of modules configured, tested, and implemented)

6. Reflecting on the Zambia EQUIP2 experience in terms of what can be useful for other USAID EMIS projects.

What worked

- USAID wisely took the decision to support MOE needs and in so doing adopted a flexible implementation approach.
- Due in large part to the above, and the fact that EQUIP2 staff was embedded in the MOE, USAID and EQUIP2 staff developed both the trust and close working relationships required for effective implementation.
- In the case of EMIS, it was helpful to have continuity in terms of the key-implementing actors from a prior USAID project financed by USAID/Zambia and channeled through AED.
- "This year's data" continued to be produced "this year" with the help of outside TA.
- EMIS data acquired increased credibility and became accessed frequently by entities outside of the MOE (donors, NGOs, civil society) for their particular needs.
- In addition to an EMIS component, it was helpful to have other components that generated the need for EMIS data (policy, management, decentralization).
- It was helpful to have long- and short-term advisors who worked closely with their MOE counterparts and knew how to access and use the EMIS data to contribute to policy and other decisions.
- The MOE district staff made increased use of EMIS data for planning/programming.
- Data generated by the EMIS and GIS was used for education planning and decision making: to get the MOE to recognize the importance of incorporating community schools in their census and as a part of the national school system, which needed support; to decide not to provide free secondary education; to allocate students qualified for high schools to areas of the country where there were spaces for them; to assist districts to prepare their budget; to influence the Ministry of Finance to increase its budget allocation to the MOE.

What didn't work

- Although significant progress was made toward sustainability, some aspects are being sustained and some to varying degrees, some have not, and others remain to be seen.
- Continuity is difficult without qualified and committed Directors of Planning who receive institutional support and resources.
- Staff turnover in the EMIS unit and other related units was an endemic problem: people got trained and then left the MOE for higher paying jobs elsewhere.
- Given that the MOE did not have control over the personnel that they named, vacancies remained in key offices for long periods of time; when individuals often lacked the skills to carry out the job.
- There was limited capability among MOE staff to interpret/use data without external donor assistance.

Valuable insights from interviewees

On contributing to sustainability

The most effective part was just sitting down together and solving a problem. By being a part of a team you all learn from each other. It's not a one-way thing, you debate, argue, and a better product emerges. As advisors, we tried not to work independently but we were prepared to work within the realities of the MOE environment. We were a part of the team and we worked under the direction of the MOE leadership, even if that meant working together with MOE colleagues on a last minute assignment late at night or over the weekend. (Sri Perrera, EQUIP2 EMIS advisor)

In my last year my focus to improve sustainability was to simplify systems and processes as much as possible. We tried to set up an environment that strived for continuous improvement but simplified systems. For example, by expanding the number of predefined reports we made information more accessible to all users. Our goal was to reduce the dependency on scarce skills. The more we could build into the predefined reports, the more people could access that information without having to depend on individuals with database query skills. By simplifying some of the data cleaning and data management tasks, we made district level data management and ownership possible. (Sri Perrera, EQUIP2 EMIS advisor)

The key issue is more complex than whether or not technical assistance is still needed, can the Ministry sustain what has been introduced, or have we worked ourselves out of a job. Ministries almost everywhere have been and will be in need of technical assistance in key strategic and technical areas. Our challenge is "graduation." We work together with the MOE to address a set of issues and challenges in one point in time, and help strengthen their capacity to respond.

Then as they become more competent and move on to other, more complex issues, their technical needs change and are more complex. As a project, we need to be able to graduate to that next level of demand or need, and to accompany—in the most appropriate way—the Ministry as its needs evolve. We, and others, must have the ability to keep pace with the maturing needs of the Ministry of Education. This was especially the case in EMIS, due in a certain part to our success, where the MOE's needs expanded at a faster rate than we were able to keep pace with. What the Ministry of Education needs at a certain time is technical assistance to accomplish A, B, and C; and the following year D, E. and F. (Tom Lent, AED home officer director)

On training

If you think the amount of training needed is X, you should budget for 3X. Internal inefficiencies, turnover of personnel, the basic selection process for people who get "training and funding" all mitigate against easy and efficient training. (Kurt Moses, AED home office EMIS specialist)

On achieving systemic change

In Zambia, we found that our work at the centralized ministry level would only have limited, trickle down impact if we did not try to identify and work with the potential dynamism of provinces, districts, and head teachers. We started supporting provincial education officers and district officials in their convening of stakeholders and putting the issues of low test scores, low performance, and school quality on the agenda of schools and education leaders, the private sector, NGOs, and civil society. Good provincial leadership was successful in raising awareness and indignation around poor school quality, and getting people to commit to a new standard and goals. Also, we try not to treat education problems as though they only have education solutions. What works and why is fundamentally a development issue, and is similar to what we have learned in development over the decades about agency, reform, engagement of communities and stakeholders, access to quality information, not losing focus on children and understanding their context and realities. (Tom Lent, AED home officer director)

On maintaining a staff at the Ministry of Education with technical skills to run the EMIS

A key issue with EMIS is that you train specialists in the Ministry of Education, provide them good technical and analytical skills, give them certifications and respected (world caliber) training, and then they leave for better paying jobs elsewhere—usually in the private sector, but sometimes directly with donors or NGOs. A possible way around this is to identify secondary level math or science teachers, in mid-career, who have shown dedication to education and "second" them for EMIS and analytical jobs. Then, rotate them through the Ministry

of Education head office for two to three years. We did this successfully in Zimbabwe in the 1980s. The Head Office gained from people with "real world experience" and when the personnel returned to another more decentralized position, they carried with them an appreciation of Head Office needs. (Kurt Moses, AED Vice President and home office EMIS specialist)

Annex 3: Interview Protocol

Step 1: Background Information

1. Interview start and end time:
2. Country and project:
3. Date of interview:
4. Name(s) of interviewee(s):
5. Nature of interviewee(s) participation/involvement in project and over what time period:
6. Context

Step 2: Share with interviewee portions of matrix for country that lists the project objective(s) (as stated in RFTOP and in USAID response), key activities/results, time frame, and funding level.

1. Ask if this reflects the person's understanding of initial project objectives and planned activities.

Step 3: Using this information as a point of departure, probe to obtain the following information related to project design:

1. What was the developmental hypothesis (or, What do you think the designers wanted the project to achieve? How was it expected to get there?) , was it valid, and did it evolve over time?
2. What were the assumptions behind the development hypothesis, were they valid, and did these assumptions evolve/change over time?
3. What were the key activities and how was the mix of activities selected (or how did you think that by investing in these activities you would achieve the project objective(s)?
4. What were the assumptions underlying selecting the specific mix of activities; were they valid; did these assumptions evolve/change over time?

5. The project was programmed to last X years with X budget. What was the basis for thinking that this time frame and budget would be appropriate for achieving your overall objective(s)?
6. When the project was designed were provisions made to ensure sustainability of project actions/activities? What were they?
7. (if appropriate) Was there an expectation that XYZ would be achieved during the first or second year of the project?

Step 4: With the above information in hand, let's turn to project implementation

(Note: it is possible that some of the topics below may have come up spontaneously and been addressed during Step 3. If they have, use this information as a basis for deciding to what extent it is necessary to address the questions that follow)

1. Did the project activities lead to the outcomes expected; if not, what were the reasons for not achieving expected outcomes?
2. Did the project build in sufficient resources; if not what were the consequences/ trade offs?
3. Did the project build in sufficient time; if not what were the implications for achieving the outcomes expected?
4. Did the project end up adding/modifying project activities, adjusting the budget, the time frame?
5. Was sustainability achieved? Is so in what way? If not, what were the factors that impeded achieving sustainability?

Step 5: Focusing on Monitoring and Evaluation

(Note: this is for individuals interviewed who had a close knowledge of M&E; it is possible that several interviewees did not and therefore may not have much to say)

1. What indicators were selected to assess project impact and track activity progress? Were there any evaluations and, if so, what was their objective?
2. Which were the most useful measures of impact/progress? Which were not? Why?
3. How was the information from the indicators tracking/evaluation(s) used?
4. With the benefit of hindsight were there other/additional indicators that you think should have been used?

Step 6: An examination of successes and challenges, adapting to changing circumstances

(Note: again it is possible that the topic of successes and challenges may have come up spontaneously during the interview. If so: indicate to the interviewee that s/he has already referred to several successes and/or challenges. Would s/he like to add any others or expand on any they have already mentioned?).

1. What aspects of the project were most successful? Why?
2. What were the key challenges faced during implementation; and was it possible to successfully address them?

(Note: Depending on how the interviewee responds, probe in order to identify if any of the items below represented challenges. Also make sure to identify the source(s) of the challenge: (1) within USAID; (2) within MOE; (3) within FHI 360); (4) Factors outside of the control of key project actors.

3. How easy was it to adapt to changing circumstances?
4. How easy was it to reprogram or change aspects of the program?

Closing:

1. Is there anything else that you think is relevant that you would like to share?

Annex 4: Individuals Interviewed

UGANDA: STRENGTHENING OF THE UGANDA EDUCATION MANAGEMENT INFORMATION SYSTEM

- David Bruns, USAID/Uganda education team leader (2003–2005)
- Danie Wium, EQUIP2 Africon technical advisor (2003–2005)
- Kurt Moses, EQUIP2 AED Vice President and home office Project Director (2003–2005)
- Albert Byamugisha, former deputy to the Ministry of Education (2003–2005)

MALAWI: EDUCATION SECTOR POLICY, PLANNING, EMIS SUPPORT ACTIVITIES AND HIGHER EDUCATION STRATEGIC PLAN DEVELOPMENT

- Bill Mvalo, USAID/Malawi education team leader (2003–2005)
- Tom LeBlanc, USAID/Malawi education team leader (2005–2008)
- Marisol Perez, USAID/Malawi education team leader (2007–2008)
- Fahim Akbar, EQUIP2 Chief of Party and EMIS technical advisor (2003–2008)
- Kurt Moses, EQUIP2 AED Vice President and home office Project Director (2003–2008)
- Augustine Kamlangera, Former Director of Planning, Malawian Ministry of Education
- Martin Masanche, EMIS technical expert, Malawian Ministry of Education (2008–)

MALAWI: EDUCATION DECENTRALIZATION SUPPORT ACTIVITY (EDSA)

- Marisol Perez, USAID/Malawi education team leader (2007–)
- Joan Sullivan Omoyowela, EQUIP2 FHI 360 EDSA Chief of Party (2009–)
- Alistair Rodd, EQUIP2 RTI EDSA short-term decentralization advisor (2009-)
- Grace Banda, EQUIP2 RTI EDSA Malawian decentralization advisor (2009–)
- Charles Matemba, EQUIP2 RTI EDSA Malawian EMIS advisor (2009–)
- Carrie Willimann, EQUIP2 FHI 360 home office EDSA Project Director (2010–)

ZAMBIA: SUPPORT TO THE MINISTRY OF EDUCATION STRATEGIC PLAN IN IMPROVING INFORMATION AND STRENGTHENING POLICY IMPLEMENTATION

- Kent Noel, USAID/Malawi education team leader (2001–2004)
- Cornelius Chipoma, USAID/Zambia EQUIP2 AOTR (2004–2010)
- Arnold Chengo, EQUIP2 Chief of Party (2004–2009)
- Sri Perrera, EQUIP2 Deputy Chief of Party and EMIS technical advisor (2004–2008)
- Kurt Moses, EQUIP2 AED Vice President and home office EMIS technical advisor (2004–2010)
- Tom Lent, EQUIP2 AED home office project director (2005–2010)
- Barbara Chilangwa, Zambian Ministry of Education Permanent Secretary (2001–2004)
- Lilian Kapulu, Zambian Ministry of Education Permanent Secretary (2004–2010)

Annex 5: References

UGANDA

Africon Limited/AED. (2006). *Education Management Information System (EMIS 3) Final Report*.

Africon Limited/AED. (2003). *Program Description, Support for the Education Management Information System, Quarterly Report for the Period September 1, 2003 – December 21, 2003*.

Drew, Douglas. (Draft). Lessons Learned Study on EMIS in Uganda. Washington D.C.: USAID.

MALAWI

AED. (2009). *Education Decentralization Support Activity (EDSA) Quarterly Report, Quarter 2-FY 2009, January – March 2009*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED. (2009). *Education Decentralization Support Activity (EDSA) Quarterly Report, Quarter 3-FY 2009 April – June 2009*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED. (2010). *Education Decentralization Support Activity (EDSA) Quarterly Report Quarter 2-FY 2010 January – March 2010*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED. (2010). *Education Decentralization Support Activity (EDSA) Quarterly Report Quarter 3-FY 2010 April – June 2010*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED. (2010). *Education Decentralization Support Activity (EDSA) Quarterly Report Quarter 1-FY 2011, July – September 2010*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED/EDC. (Draft). EQUIP2 Associate Award: Performance Monitoring Plan for the EQUIP2 Education Sector Policy, Planning, EMIS Support Activities and Higher Education Strategic Plan Development Project, USAID/Malawi.

Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED. (2010). *Performance Monitoring and Research Plan Malawi Education Decentralization Support Activity (EDSA)*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

AED. (2009). *USAID/Malawa, Education Decentralization Support Activity (EDSA), Work Plan: Year 1, 2009*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

Akbar, Fahim. (Draft). EQUIP2 Associate Award: Final Report for the EQUIP2 Education Sector Policy, Planning, EMIS Support Activities and Higher Education Strategic Plan Development Project, USAID/Malawi. Washington, D.C.: Academy for Educational Development and Education Development Center.

USAID/Malawi. (2009). *Education Decentralization Support Activity Program Description*. Washington, D.C.: EQUIP2 Malawi Education Decentralization Support Activity (EDSA).

ZAMBIA

AED. (2010). *EQUIP2 Zambia: 2010 Work Plan & Budget*. Washington, D.C.: EQUIP2 Zambia.

AED. (2010). *EQUIP2 Zambia: January - March, 2010 Quarterly Report, May 2010*. Washington, D.C.: EQUIP2 Zambia.

AED. (2010). *EQUIP2 Zambia: July - September, 2010 Quarterly Report, October 2010.* Washington, D.C.: EQUIP2 Zambia.

AED. (2010). *EQUIP2 Zambia: Monitoring and Evaluation Plan 2007 – 2010, January 2007.* Washington, D.C.: EQUIP2 Zambia.

AED. (2009). *Strengthening the Capacity of the MOE to Reach National and International Education Goals: The Story of EQUIP2 Zambia, 2004-2009*. Washington, D.C.: EQUIP2 Zambia.

AED. (2004). *USAID/Zambia Program Description: Support to the Ministry of Education Strategic Plan in improving Information and Strengthening Policy Implementation*. Washington, D.C.: EQUIP2 Zambia.

The EQUIP2 Lessons Learned in Education Series: Guides to Education Project Design, Implementation, and Evaluation Based on Project Reviews of USAID-funded EQUIP2 Associate Awards. Other topics in this series include:

- Decentralization
- Policy Dialogue
- Secondary Education
- Student Assessment
- Teacher Professional Development

For more information, please contact:

USAID
Patrick Collins
EGAT/ED/BE, USAID
Washington
1300 Pennsylvania Ave., NW
Washington, DC 20532
Tel: 202-712-4151

FHI 360
Audrey-marie Schuh Moore
EQUIP2 Project Director
1825 Connecticut Ave., NW
Washington, DC 20009
Tel: 202-884-8187
Email: aumoore@fhi360.org
Web: www.equip123.net