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MEETING THE DATA CHALLENGE IN EDUCATION

A KNOWLEDGE AND INNOVATION EXCHANGE (KIX) DISCUSSION PAPER

GLOBAL PARTNERSHIP *for* EDUCATION

Acknowledgments

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A note on the KIX consultation process

The Global Partnership for Education's Knowledge and Innovation Exchange (KIX) thematic funding will support global and regional initiatives that use knowledge exchange, evidence and innovation to help developing countries solve critical educational challenges. It will support:

- **Capacity development and knowledge exchange among developing countries**: activities that strengthen national capacity through peer review and exchange; creation of learning modules and diagnostic tools; and face-to-face exchange
- **Evidence and evaluation**: activities that aim to consolidate and/or extend knowledge about how to improve educational outcomes and national education systems
- **Innovation pilots**: piloting of approaches, methods, tools or products that solve persistent educational challenges

Investments will be guided by the priorities of developing country partners and allocated through a competitive process managed by an independent grant agent. Knowledge products, innovation pilots and related tools developed through KIX funding will be shared through the Learning Exchange to amplify their uptake.

The purpose of this paper is to describe the current landscape in education data systems and spark discussion and debate around potential areas for KIX investment. The paper is part of a series of discussion papers, drafted to support the engagement and consultation of developing country partners and technical experts in the initial design of the GPE Knowledge and Innovation Exchange. The ideas presented in the initial version of the paper served as a starting point for discussion and were modified significantly based on the consultation process, thereby resulting in this updated version.

Acronyms and Abbreviations

ADEA	Association for the Development of Education in Africa
CHNRI	Child Health and Nutrition Research Initiative
DCP	developing country partner
DHIS2	District Health Information System 2
DQAF	Data Quality Assessment Framework
EMIS	education management information system
ESPIG	education sector program implementation grant
FCAC	country affected by fragility and conflict
GPE	Global Partnership for Education
GRA	Global and regional activities program
IIEP	International Institute for Educational Planning
JSR	Joint sector review
LURITS	Learner Unit Record Information and Tracking System
KIX	Knowledge and Innovation Exchange
MICS	Multiple Indicator Cluster Survey
NGO	nongovernmental organization
OECD	Organization for Economic Co-operation and Development
PAL	People's Action for Learning
PROMISE	Program Management System in Education for Everyone, Everywhere
REC	regional economic communities
SABER	Systems Approach for Better Education Results
SDG	Sustainable Development Goal
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund

Executive Summary

Improving data in the education sector

Over the past two decades, many actors, including the Global Partnership for Education (GPE), education ministries, civil society, nongovernmental organizations, and global development partners have contributed innovations to education data. This includes improvements in education management information systems (EMIS), data availability and usage—with some remarkable achievements. Though much progress has been made, there is global recognition of the need for a stronger, coordinated approach to tackling data challenges in education, particularly in low- and lower middle-income countries and countries affected by conflict, as they face some of the starkest challenges in education.

Challenges to better data in education

The sector faces two broad data challenges: availability of data and how data is used. Sustainable Development Goal 4 (SDG 4) posits the need for a significant ramp-up in the use of data to guide system-level improvement of educational outcomes in learning and equity. Yet only 43 percent of GPE developing country partners (DCPs) report on 10 of 12 core education indicators to the UNESCO Institute for Statistics (UIS).[1] Worldwide, only 23 percent of countries currently report on the most important SDG 4 global indicators.

Challenges to data availability are partly due to the fact that data units in most ministries are understaffed and underfunded. Furthermore, they rely on data systems that are optimized to report on enrollment numbers and some inputs rather than quality of schooling and learning results—which are more challenging to measure. Most systems track data only at the aggregate level, not at the child level; they focus on the "average child." This makes it difficult to assess whether the education sector is paying attention to the most vulnerable, or using the right interventions to reach them. In contrast to the health sector, there is also relatively little use of random-sample survey data, and there is insufficient investment in easy to implement and modify "turnkey" EMIS or "EMIS in a box," which can be essential for building back data systems in situations of conflict and fragility. A turnkey EMIS or EMIS in a box is a modular data system (software) adaptable enough to be used in many different contexts because education planners can modify the system as required. When using a turnkey EMIS, governments do not have to develop their system from the very first step.

Challenges to how data are used stem from the fact that data are not being collected and developed to address the needs of frontline data users. This leads to a lack of "demand" for data among stakeholders in education that is not as apparent in the health sector. Existing education data systems tend to flow data up from schools to national and global levels, without much opportunity for use in solving local problems. Data systems also typically do not produce comprehensive reports, even for top-down uses, detailing what is happening within schools (enrollment, persistence, learning, teachers, finances, and poverty and health contexts) as actual management units. The absence of complete school data means that major efficiency and equity issues are missed at the district and national levels. So too is the opportunity to identify schools that rise above the odds and are able to achieve exceptional progress with similar resources.

How GPE supports better data in the education sector

A strategic goal of GPE is to support the development of effective and efficient education systems across its partnership of DCPs, helping these countries to deliver equitable, quality education for all. Supporting

[1] GPE (Global Partnership for Education), *GPE Results Report 2015/2016* (Washington, DC: GPE, 2017), xiii.

better availability and use of data in national sector planning and monitoring, through GPE's large-scale implementation grants, is an important feature of GPE's work, as expressed in the GPE 2020 strategy and monitored through its annual results report.

Countries receiving GPE grants must demonstrate they either have a robust EMIS or a plan to develop one. More than three-quarters (29) of the 37 country-level education sector program implementation grants (ESPIGs) active in June 2018 contained a component to develop or improve an EMIS.

GPE has spearheaded and supported a number of initiatives that have contributed to improvements in the education data environment, including the UNICEF-led Data Must Speak project that supported the setting up of data feedback tools, including district and school profile cards, for improving equitable allocation of resources and community participation in monitoring. GPE has also engaged the UIS to support improvements in data on education financing where data transparency and availability remains a critical issue.

To address shortcomings in the availability of quality data in DCPs, the GPE Secretariat recently convened a task force on EMIS with a consortium of international development agencies and jointly sponsored a conference on EMIS with UNESCO in April 2018. More than 20 DCPs presented their experience in developing their data systems at this conference. GPE is also sponsoring an Education Data Solutions Roundtable over the next year to leverage the expertise of private, public and multilateral players to address the data challenge. The recommendations in this paper are informed by this ongoing consultation process. Earlier versions of this paper were shared at these in-person events and revised based on feedback from DCPs and experts in the field.

Global goods and innovations aimed at getting better data in the education sector

There have been many data innovations in the education sector. They need to be studied further, with the worthwhile ones replicated and mainstreamed. Some countries track individual children and use data and money to incentivize attendance rather than only enrollment. Some are producing systems where upward reporting is driven by data developed and used at the school level, and where multifaceted reports are used in each school. Some of these approaches are far from high-tech, yet they are effective.

Many other examples of positive innovation exist and there are particular areas of opportunity for further investment, including regarding the use of digital technology to support both availability and utilization challenges. Engaging the expertise of the business community to promote better availability and usability of data is another important area for exploration.

Gaps in available global goods

Although there are some innovations in education sector data, they are not widespread and there are gaps in global goods available. Global goods are "Institutions, mechanisms and outcomes that provide near universal benefits, reach across borders and extend across generations"[2]: that is, tools, products and approaches —including data, assessment tools, standards and research outcomes—that, once developed as the outcome of one particular intervention, can be adapted to create a tool or approach that is applicable, with appropriate customization, to other contexts.[3]

[2] UNESCO/Global Education Monitoring Report. "Fulfilling Our Collective Responsibilities: Financing Global Goods in Education." Policy Paper 34, UNESCO/Global Education Monitoring Report, Paris, 2018a.

[3] The International Commission on Financing Global Education Opportunity. 2016. *The learning generation: Investing in education for a changing world*. Washington DC: Education Commission.

First, there is a need for **building national capacity through knowledge transfer, capacity development and learning exchange**. Governments lament how building capacity is often not sustainable. There is a lack of knowledge about how to sustain capacity development in DCPs. Many overlapping tools exist to analyze the quality of EMIS, but there is no unified approach that would allow countries to easily self-assess or jointly address data problems. There is also a deficit of knowledge regarding the best ways to use technology to modernize EMIS. Peer learning, from the minister to the implementer level, is also lacking.

Second, there is a need for **building evidence and evaluation of what works** in data systems. There is a lack of knowledge and systematic evidence on cost-effective and sustainable practices in using data from EMIS at the classroom, school and district levels. There is also a lack of knowledge about which technological innovations are improving information flow from the classroom to the ministry and back.

Finally, there is a need for **innovation in education sector data**. For example, the education sector lacks a turnkey or EMIS-in-a-box approach that can catalyze development of data systems, popularizing a toolkit that can be used in even the most constrained contexts. There is a lack of innovation around data on underserved populations, child-level records, and learning outcomes data in EMIS, and a lack of innovation about how to present the data in interesting ways.

Potential areas for KIX investments under the data theme

Given existing GPE investments, available global goods and gaps observed, several areas for investment and potential global goods are proposed for funding under the data thematic area. This list reflects prioritization emerging from cross-stakeholder consultations on earlier versions of this paper. To ensure KIX investments in these opportunities respond to the needs and landscape, several areas of investment are required that include:

Building capacity through knowledge transfer, capacity development and learning exchange on issues where there is a sufficient evidence base. This may include creation of regional or global hubs to support data capacity, streamlining existing EMIS diagnostic tools and coordinating standards, and developing EMIS-in-a-box solutions, especially for fragile and conflict-affected settings.

Building evidence and evaluation of what works on topics where there are some solutions, but where more synthesis is needed to develop a solid evidence base. This includes creating evidence on user needs and habits at the school and district levels to inform EMIS design and improve data utilization; documenting best practice in production and use of child-level records; and assessment of opportunities to use technology to improve data availability and use.

Innovation on topics where new thinking and solutions are needed. This could include piloting new approaches for data for multiple populations and multiple sources; creating a cross-national digital platform for combining and sharing education data across countries; and piloting innovative approaches to data presentation and visualization of data.

1. Introduction

The Global Partnership for Education (GPE)—the world's only multi-stakeholder partnership and fund devoted uniquely to education—has committed itself to bringing together experts and policymakers to identify key solutions to education's data challenges in its developing country partners (DCPs). As part of

the partnership's commitment to the Sustainable Development Goal 4 (SDG 4) goals for education, GPE works with the DCPs and global actors to build a joint platform for learning and innovation that can ensure improvements in the availability and utilization of data in the education sector. GPE launched a partnership Education Data Solutions Roundtable at its February 2018 replenishment conference in Dakar, Senegal, as a first step toward realizing this vision.[4]

The education sector in developing countries faces significant data challenges—and has much, as emphasized in this paper, to learn from the health and other sectors. But much progress has been made. For example, the last hard copy of UNESCO's *Statistical Yearbook*, published in 1999, contained no data on the primary school completion rate, arguably the single most important Education for All and Millennium Development Goal indicator. By 2016, 180 countries were reporting their primary school completion rate, and this data is available online. While only 10 indicators were available in hard copy in 1999, today's online systems at the UNESCO Institute for Statistics (UIS) and the World Bank, to name two systems, produce many dozens of indicators that are available for easy download and visualization—albeit with several years' lag and uneven national reporting, as will be discussed below.

There are also inspirational stories of this data transformation occurring in the education sector—as illustrated by Chile. Today, Chile is a high-income country and a member of the Organisation for Economic Co-operation and Development (OECD), with relatively low rates of poverty. But less than 30 years ago, the country was coming out of a military dictatorship, with considerable paucity of data, and a limited commitment to sharing that data publicly. Over two decades, Chile succeeded in becoming one of the most data-open and data-deep countries in the world, not just among developing countries. Data allowed Chile to target resources to schools most in need and to monitor the impact of major policy reforms. Because such data were presented publicly, they also provided a foundation for greater social accountability, including regarding contested issues such as private provision of educational services.

While implementing such a comprehensive approach takes time, gradual steps in the same direction as Chile are clearly possible. Other countries already use systems that get partially to where Chile is today. For example, South Africa develops child-level records and uses data to drive pro-poor funding (these approaches are discussed in section 4). It is unreasonable to expect that the poorest countries, or those living through crises and conflict, should have as much data as OECD countries. However, many countries, even relatively poor ones, have progressed substantially in developing data systems for monitoring progress—even if they do not yet consistently use data to drive improvements in performance. This was plentifully evident at the 2018 GPE-UNESCO Conference on EMIS, where more than 20 countries shared with each other, and with the international community, innovations and progress on data systems.[5]

In short, while there is urgency, there are also inspirational examples of progress. And opportunities exist for GPE to bring stakeholders together to explore how "a data revolution for sustainable development," as called for by the United Nations sustainable development agenda, can be achieved for education.[6]

This paper is organized as follows: Section 2 outlines the process followed to develop this paper and refine key investment areas. Section 3 frames what GPE is doing in the realm of data. Section 4 establishes a baseline of available global goods relevant to the production and use of education data. Section 5 outlines the gaps and the areas that need knowledge generation and innovation. Section 6 concludes, providing a list of priority areas for data investments, based on ongoing dialogue and consultation across stakeholders.

[4] "GPE Financing Conference, an Investment in the Future, Dakar 2018," Global Partnership for Education, accessed May 7, 2018.
[5] UNESCO, "UNESCO & GPE Launch First International conference on Education Management Information Systems," news release, April 20, 2018.
[6] See http://www.undatarevolution.org/.

2. Paper development and consultation process

The starting point for the development of this discussion paper was a landscape review by a senior commissioned author of the literature on data in education, an exploration of existing initiatives (both in education and health), and extensive informal interviews with around 15 key agency experts and practitioners in the area. The primary purpose of this initial review was to identify global gaps, in particular, those areas where GPE has a comparative advantage relative to other partners and could make a tractable and meaningful contribution to the space.

The first draft of this document highlighted apparent areas of greatest need by studying the level of current reporting on key SDG indicators, the gaps identified in Systems Approach for Better Education Results (SABER) analyses of countries' EMIS, and GPE's own priorities. This paper was presented at the launch of the Education Data Solutions Roundtable, at GPE's replenishment event in Dakar in February 2018, where DCP and expert participants provided a first round of feedback and began identifying some priorities. Further revisions and prioritization of areas for possible investment were undertaken in parallel to the organization of an international conference on EMIS, convened jointly by GPE and UNESCO in Paris in April 2018, which allowed 20 DCPs to engage around key lessons learned and challenges faced in developing and improving their administrative data systems. The closing session of this conference was in part structured to allow developing country participants to discuss and prioritize those areas where they identified international support as being most useful in their contexts. The GPE Secretariat also convened a task force on EMIS with a consortium of 10 international development agencies. This task force acted as a valuable resource in helping to streamline the priorities listed for the data thematic area.

A final review of this consolidated and amended list was undertaken via an adapted version of the research prioritization exercise developed by the Child Health and Nutrition Research Initiative (CHNRI) distributed to both DCPs and international experts.[7] Forty experts across both DCPs and international organizations were contacted to undertake the CHNRI; however, the sample size of respondents was small (16 DCPs and five international experts, the latter group including two coordinating agency representatives) and therefore the results should be interpreted with caution. They are briefly discussed in section 6 of this paper, as a means to triangulate against and reinforce findings from the primary consultation processes.

3. How GPE supports better data in the education sector

A strategic goal of GPE is to support the development of effective and efficient education systems across its low- and lower middle-income member countries, helping these countries to deliver equitable, quality education for all. Supporting better availability and use of data in national sector planning and monitoring, through GPE's large-scale implementation grants, is an important feature of GPE's work, as expressed in the GPE 2020 strategy,[8] and monitored through its annual results report.

GPE invests heavily in education sector planning, providing grants of up to US$500,000 to DCPs to prepare sector plans based on evidence and data. Once a plan is endorsed, GPE offers a large-scale implementation grant of up to a maximum of US$100 million. To receive this funding, a country must demonstrate it has

[7] The highly structured CHNRI process relies on the collective opinion of expert stakeholders to identify key priorities and areas of consensus. The CHNRI uses an independent scoring system, which ensures no individual can dominate the process and makes it possible for the CHNRI to be implemented by a small team of individuals.

[8] Global Partnership for Education. "GPE 2020 Strategic Plan." Washington DC: Global Partnership for Education, 2016.

a robust EMIS or plans to develop one. More than three-quarters (29) of the 37 country-level education sector program implementation grants (ESPIGs) active in June 2018 contained a component to develop or improve an EMIS.

In parallel to country-level grant financing, GPE has spearheaded and supported a number of initiatives contributing to improvements in the education data environment. The recently concluded Global and Regional Activities (GRA) program funded, among others, a UNICEF-led Data Must Speak project that supported the setting up of data feedback tools, including district and school profile cards, for improving equitable allocation of resources and community participation in monitoring (see below). Other notable investments (with the UIS and UNICEF) focused on improving data on out-of-school children.

More recently, GPE has engaged technical partners to support improvements in data on education financing, where data transparency and availability remain a critical issue. To address shortcomings in the availability of quality data in partner countries, the Secretariat convened a task force on EMIS with several international development agencies, including the African Union (AU), the Association for the Development of Education in Africa (ADEA), Agence Française de Développement (AFD), Education Cannot Wait (ECW), the U.K. Department for International Development (DFID), Australia's Department of Foreign Affairs and Trade (DFAT), UNESCO (including the International Institute for Educational Planning [IIEP] and the UIS), UNICEF, UNHCR and the World Bank. The task force provided critical inputs to the April 2018 joint UNESCO-GPE conference on EMIS in Paris, where developing countries and international technical agencies gathered to document and share lessons learned on how to best strengthen country capacity to assess, implement and monitor education systems.

In parallel, during its 2018 replenishment conference in Dakar, the Secretariat launched the Education Data Solutions Roundtable. The Data Roundtable's goal is to leverage local, private and development partners' expertise to improve the availability and use of accurate and timely education data at country and global levels. Members of the Roundtable include senior representatives from developing country governments, donor governments, the business community (HP, Econet, Intel, Tableau, Mastercard, Microsoft, Ecobank), business foundations (Dell Foundation, Aga Khan Foundation), civil society, the World Bank, UNICEF, UNHCR and UNESCO and its institutes and regional offices. The group has agreed to focus on developing sustainable solutions to support (i) better tools for education information management, (ii) better data communication and visualization tools, and (iii) integration of data across different systems.

Finally, through its new Knowledge and Innovation Exchange (KIX) program, GPE will make investments aimed at addressing the challenge of data availability and utilization across the partnership.

4. Global goods and innovations aimed at getting better data in the education sector

There are many global public goods available in the education data domain. There are four main data sources of these global public goods:

- EMIS and other administrative data systems
- Household and school surveys
- Randomized control trials and other evaluations
- Real-time monitoring tools

Table 1 shows what is available, how the available data can be used, and where there are gaps. The check marks refer to relevance, as some data sources are not particularly useful for some purposes.

Table 1. Sources of data and how this data are used

Data Sources	How the sources of data are used		
	Evidence-based policy and planning	System management and accountability	Global reporting (and similar tasks)
Routine EMIS and other administrative data systems	✓	✓	✓
Household and school surveys	✓		✓
Randomized controlled trials and other evaluations[a]	✓		
Real-time monitoring tools, including school- and classroom-based	✓	✓	

Source: Based on typology proposed by Matt Brossard (UNICEF) at Education Data Solutions Roundtable, Paris, April 2018.
a. This refers to data in a loose sense—it refers more to research. Thus, the availability or gaps in this area are not emphasized in this paper. This paper focuses on data as such, even if the line is sometimes a little blurry.

Available global goods can be thought of as being in one of two categories:

- "True" global public goods, namely knowledge and systems whose fixed costs have already been paid for or could be paid for centrally and are paid for only once
- Applications within countries that need to be paid for over and over, or have been paid for, but not replicated by other countries

Among "true" global public goods, much progress has been made in (at least) the following areas (with gaps also noted to foreshadow section 5):

The UIS and the World Bank both host **online, downloadable data systems** that have both ready-made or "canned" tables and infographics, but, more importantly, the availability of these data permits anyone with Excel or other statistical skills to analyze key data any way they like.[9] Other organizations have online data repositories, too, but the UIS and the World Bank data systems are likely the most complete, authoritative, and have the best ratio of comprehensiveness and power to ease of use. These data are not complete as some key indicators are missing and many countries do not report on some important indicators. Furthermore, key indicators are reported with a significant time lag, often two or more years. However, these data are a significant source of global information and are much better than what existed 10 years ago. The Global Education Monitoring Report (GEMR) also provides a lot of hard data.[10] The great majority of these data are drawn from the reports countries submit to the UIS, but many other data sources (such as international learning assessments and other research-based estimates) are also available.

Multilateral and bilateral international development agencies have been **supporting capacity building as well as providing software and hardware to EMIS efforts** in the developing world, globally, regionally and nationally for many years. As a result, most countries now have EMIS that range from relatively rudimentary (such as those functioning in crisis situations) to quite sophisticated. Capacity-building

[9] "UIS Statistics," UNESCO Institute for Statistics, accessed May 7, 2018, http://data.uis.unesco.org; "Education Statistics (EdStats)," Data on Statistical Capacity, World Bank, accessed May 7, 2018, http://datatopics.worldbank.org/education.
[10] "Global Education Monitoring Report" (website), UNESCO, accessed May 7, 2018, https://en.unesco.org/gem-report.

programs have been documented and are widely available, though perhaps not as streamlined as they could be. Although the UIS, the IIEP and the World Bank have perhaps been the most active and contain the most complete repositories of capacity-building materials, other agencies working in this area have documented their work, to varying degrees.

Various attempts to create turnkey EMIS approaches, that one might term **"EMIS in a box,"** have been created, and some now form the backbone of several countries' EMIS. For example, OpenEMIS is an available open-source system first developed by UNESCO.[11] The Aga Khan Foundation is experimenting with Program Management System in Education for Everyone, Everywhere (PROMISE), an app-based system that would allow schools and school systems to track student enrollment, persistence and attendance and learning outcomes, as well as transmit this data for availability in near real time, but without having to be online constantly. PROMISE has been piloted in several countries; the ambition is a turnkey or "in-a-box" system that could be used in a variety of contexts.

Other nongovernmental organizations (NGOs) and/or consulting firms have attempted to develop similar products. For example, Global ED*ASSIST has been developed under the leadership of FHI 360 and applied in several countries, including Sierra Leone, South Sudan and Tanzania.[12] The UIS has created a somewhat similar approach with StatEduc. However, unlike in the health sector, where a general purpose (modular, adaptable, open) "Health Management Information System-in-a-box" has emerged as District Health Information System 2 (DHIS2), no such consolidated effort has emerged as a standard default in the education sector. This might be a useful area for investment (see section 6).

There are various **diagnostic approaches to assessing EMIS**. Perhaps the best known is the World Bank's Systems Approach for Better Education Results (SABER)-EMIS, an extensive and detailed tool for analyzing the EMIS situation in a country,[13] which has been applied in at least 13 developing countries (and, for comparison, in the state of Maryland in the United States). UNICEF also has a diagnostic tool based on SABER. Additionally, UNESCO has developed a framework for assessing the quality of education statistics (DQAF).[14]

[11] "OpenEMIS – Better Data. Better Education" (website), OpenEMIS, accessed May 7, 2018, https://www.openemis.org.

[12] FHI 360, "Education Management Information System (EMIS) Support to the Ministry of General Education and Instruction, Republic of South Sudan," 2013; FHI 360, "Develop a Decentralized but Integrated Education Management Information System (EMIS) for the Sierra Leone Ministry of Education, Science and Technology," 2015.

[13] "Education Management Information Systems" (website), SABER – Systems Approach for Better Education Results, World Bank, accessed May 31, 2018.

[14] World Bank and the UNESCO Institute for Statistics, "A Framework for Assessing the Quality of Education Statistics" (Washington, DC: World Bank; Montreal: UIS, 2003).

Figure 1. A system both school-based and that tracks

Related to EMIS diagnostics, **peer review and benchmarking is being used**. Such work is being piloted, for example, by the Association for the Development of Education in Africa (ADEA), which supports the collaborative development of EMIS norms and standards by member states across regional economic communities (RECs). RECs then customize and use these criteria to advocate for best practices and undertake regional benchmarking activities. To date, EMIS peer assessments have been completed in Ghana, Mali, Mozambique,[15] Nigeria and Swaziland. On a smaller scale, a GPE initiative funds peer countries to review and benchmark the quality of joint sector reviews (JSRs); to date, peer observers have attended JSRs in Chad and the Democratic Republic of Congo. The OECD and its members have frequently used this approach. Given how recent such efforts are, it is difficult to find information on results, but the idea is promising.

In addition to these truly global public goods, there is ongoing data experimentation in many developing countries and by many NGOs. Although there are too many to mention in this paper, the following provide an idea of some possibilities, while noting that these mostly exist as isolated, country-specific or NGO-specific innovations. Cataloging, researching and possibly disseminating these sorts of ideas (and many other similar ones) are tasks that the GPE data effort could encourage or even finance.

Child-level and school-level data

Some countries have implemented approaches that both provide easy-to-use school-level data and report data up (sometimes automatically); these approaches often generate child-level data. The South African School Administration and Management System (SA-SAMS), for example, does both. These systems are often the result of many years' worth of patient trial and error, and gradual improvement over time. SA-SAMS has been under development continuously for 10 to 15 years. The software is outsourced to a national IT provider, as a central, national service, and is provided to schools for free.

[15] Mozambique, Ministry of Education. *Mozambique EMIS Peer Review Report on Implementing the SADC EMIS Norms and Standards* (Maputo, October 2014).

Figure 2. Holistic report cards – UNICEF in Madagascar

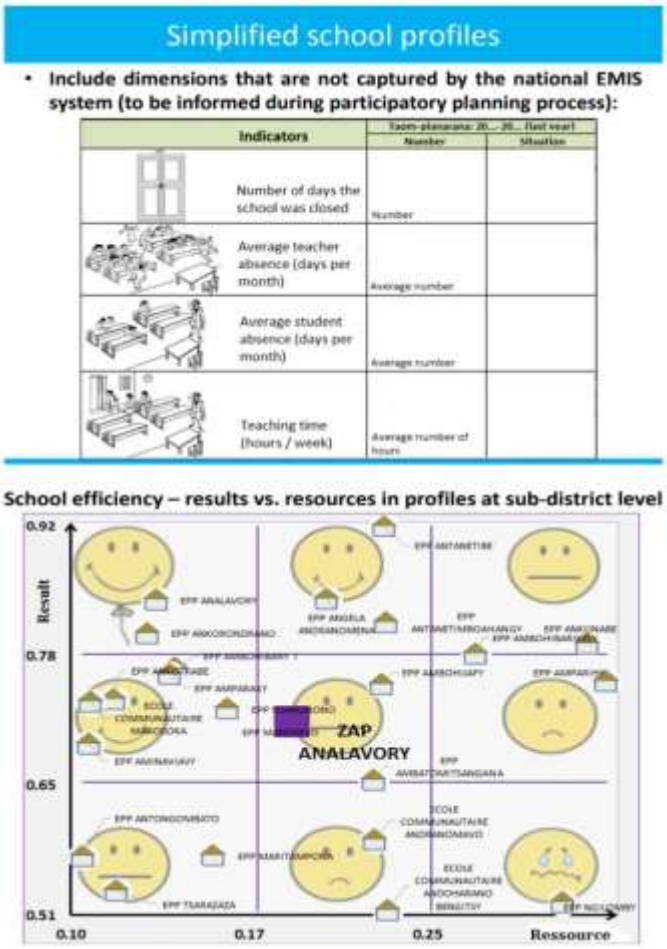

Figure 1 illustrates how SA-SAMS interacts with the Learner Unit Record Information and Tracking System (LURITS). SA-SAMS is also linked to South Africa's Department of Home Affairs' personal identity system. This not only enables a rights-based approach based on the notion of personal identity (an equity imperative), but also helps weed out "ghost learners" (an efficiency imperative)—an important feature since South Africa's school resourcing is formula-based and driven by learner numbers.[16]

According to South Africa's Department of Basic Education, the system "i) assists schools with their multiple data administration and reporting requirements, ii) reduces duplication in reporting since it serves as a single data source for operational data from schools for district, province and national levels, iii) standardizes the data and reporting format schools provide to district and province, and iv) provides immediate access to data that can assist SMTs (School Management Teams) with their multiple data requirements."[17]

Holistic school or district-level report cards

Innovation in this area also exists. One example is the GPE-funded Data Must Speak initiative,[18] implemented in Madagascar,[19] Nepal, the Philippines, Togo and Zambia (and soon Namibia) under UNICEF.

The World Bank has also sponsored many experiments with school report cards through its projects, while NGOs such as the Aga Khan Foundation have also engaged in various attempts over time. These efforts generally attempt to focus on school equity and efficiency and do focus on the school itself as a system, not on a series of vertical or top-down indicators. They often use humorous and people-level illustrations to portray information with the intent to appeal and be accessible to nonliterate community members.

Figure 2 provides an example from Madagascar. As noted earlier, observers and several evaluations have found that these innovations often are not matched by a strategy for engaging local actors as agents of

[16] Bheki Mpanza (chief director, Information and Management Systems), personal communication to the author, January 8, 2018.
[17] Department of Basic Education, Republic of South Africa, "What is SA-SAMS?", undated.
[18] Gabrielle Bonnet and Daniel Kelly, "Supporting Effective Education Systems: The Data Must Speak Initiative," Education for All (blog), Global Partnership for Education, August 30, 2017.
[19] Matthias Lansard, " 'Data Must Speak' for Increased Accountability and Community Engagement in Madagascar" (PowerPoint presentation at the GPSA Global Partners Forum 2016).

accountability and improvement. It appears that only when paired with appropriate support can such data promote pedagogical innovation among local actors (for example, teaching at the right level for learners).

A challenge common to these innovations is that they are not occurring within a national or global ecosystem that can support sustainability and scaling up. Thus, while education data entrepreneurs are emergent, there needs to be further exploration on how to create demand for data among national and decentralized actors—including through improving supply of good approaches, global promotion of core indicators, and use-based demonstrations of utility to key national stakeholders, as well as ensuring that coordinated and sustainable support is available to ensure the integration of effective data innovations into national systems.

5. Gaps in available global goods

Despite the progress made, many gaps persist. Here are two ways to broadly characterize and think about the gaps:

First, while there are some supply or production issues, **the biggest issue is the gap between supply of data and its utilization**. Participants in the 2018 GPE-UNESCO International Conference on EMIS and the Education Data Solutions Roundtable frequently pointed out the relative lack of use of existing data, in part driven by the problematic tendency of data producers to think of the issues through a systems engineering, software and hardware approach, instead of from a user-need or "design-centered" perspective. Thus, this gap between users/utilization and production is a "meta" issue. Of most import is the gap between data production (or production possibilities) and the use of data in educational *management*. Evidence suggests that the use of data in policy and planning (especially what might be called top-down management and policy-setting) has improved in the last few decades, but that the education sector still is not very skilled at using data, especially learning results data, for driving improvements in a conscious and deliberate manner.

Second, **in terms of the framework used above, the blank cells in Table 2 illustrate some of the key gaps**. The biggest gaps are described in more detail below. A recent in-depth scoping study on education data, commissioned by DFID, largely coincides with this summary.[20]

Table 2. A summary of gaps in data by source and use

Data Source	Types of use		
	Evidence-based policy and planning	System management and accountability	Global reporting (and similar tasks)

[20] Rachel Outhred et al., "A Scoping Study on Education Data Research and Methods," Health and Education Advice and Resource Team (HEART) Initiative, 2018.

Routine EMIS and other administrative data systems	• Insufficient integration with non-EMIS data sources • Insufficient value added even in simple areas such as ratios and percentages • Limited use of data for policy dialogue and discussion with other ministries and the public	• Lack of production of data that provide complete portraits of each school • Lack of child-level data	Data missing in key areas such as: • Finance • Learning outcomes, disability • Equity-oriented comparisons
Household and school surveys	• Relatively little use of household and school surveys for specialized and in-depth needs, unlike in the health sector		• Good household and school surveys could be useful in global reporting as well, especially for dealing with specialized issues, the "thematic" indicators for the sector, and indicators that are "precursors" of the SDGs
Randomized controlled trials and other evaluations	• Some progress, but it often feels "supply-led" by those with an interest in evaluation rather than "demand-led" by those with an interest in the subject matter • Policy still often based on pilot projects or simply ideas that are not always well-evaluated		
Real-time monitoring tools, including school- and classroom-based tools	• Scholars and NGOs have developed many real-time monitoring and support tools, such as classroom observation checklists for teacher coaches, or methods for tracking integration of children with disabilities into school • However, the use of knowledge derived from such tools, either for policy and planning or for routine management, is relatively lacking, even though ultimately it is the use of such data for management that can actually "move the needle" on the SDGs • Use of real-time data, often as a demand-side issue from communities and civil society, has been more prevalent when it comes to schooling access for "average" children than for learning outcomes or the specialized needs of the most vulnerable		

With these issues in mind, specific gaps are reviewed below, considering first supply-side and then demand-side concerns.

Production or supply-side gaps

A planner working on education in low-income countries might feel like a pilot flying an airplane equipped with only 10 percent of the required instruments. The pilot could steer the airplane but not know, or be

able to change, the altitude, rate of climb, engine power, speed or fuel usage. This would be more than a little alarming for the pilot. And running an education system is far more complicated than flying an airplane.

The SDGs provide a driving statement of key goals and targets for education—and are a good measure of overall data availability. Only 23 percent of all countries report on the SDG 4 and Education 2030 thematic indicators that have been identified as most important to GPE priorities.[21] To illustrate a telling extreme, none of the low-income countries have reported on the indicator "percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex," while 85 percent of high-income countries have reported on this indicator.

In addition to the broad challenge of missing data, there are more specific gaps:

Data are optimized to track inputs or access outcomes, not quality or learning outcomes

Data systems are typically, but not always, geared to produce information on access outcomes, not learning outcomes or quality. If there is a focus on quality at all, it is commonly assumed that simple indicators of input quality (for example, certification of teachers) are key to generating learning outcomes and hence are sufficient. It is also often assumed that even fairly thin indicators (number of schools, location of schools) will enable one to predict access and enrollment outcomes to a significant degree. This is illustrated by the fact that 39 percent of countries report on primary school completion rate, 44 percent on pupil-teacher ratio and 44 percent on teacher certification.[22] But none report on whether children are being taught in their mother tongue, at least in the first few grades (a critical variable according to many specialists); only 12 percent report on whether children are on track to learn to read at a reasonable age; and the availability of textbooks is not proposed as an indicator. While the annual statistical abstract or report for a fairly typical education ministry might have up to 80 tables, most focus on numbers of children, teachers and schools. Few address quality precursors (such as ratio of books per child). Even fewer report learning outcomes data or show them against data on inputs and context (even though such data increasingly exist).

Limited child-level data

To effectively address all children's needs, systems should ideally have child-level records to track individual progress.[23] This is not just an efficiency issue. One could argue that only when each child's well-being is being monitored are his or her rights being recognized and respected. A child-level approach also links up to the movement for identity as a human right. While some middle-income countries are implementing child-level systems, few lower-income ones are. There are some significant cross-sector gains to be had here: Linking education records to health records would allow systems to track the child's welfare from a holistic perspective.

Lack of emphasis on vulnerable or special populations

Similar to the tendency to focus on aggregate rather than child-by-child indicators, national planning systems tend to plan for the "average child." In the past, when education systems were rapidly expanding over a short time, this approach made sense and required relatively little planning: Almost any kind of school, built anywhere, would meet some urgent demand. The task was a simple quantitative one. As universal primary school access is reached, the needs of the "last 10 percent," or of children who would transition to secondary school and complete the secondary cycle, differ not only from the needs of the

[21] According to an analysis by the GPE Secretariat carried out as background for this paper (available on request). Priorities were evaluated according to GPE-determined criteria.

[22] According to an analysis of UIS data carried out as background for this paper (available on request).

[23] Of course, there are costs to this, and it may take some time for EMIS to develop this ability. For discussion of the "ideal" contents of a data system, see Husein Abdul-Hamid, *Data for Learning: Building a Smart Education Data System* (Washington, DC: World Bank, 2017).

"first 90 percent" but also from the needs of each other. Arguably, the vulnerable are more unlike each other in their needs than they are unlike the majority. But most education data systems are not designed to capture this phenomenon, except using regional and similar proxies. Colleagues in the health sector are keenly aware of this issue and, as a result, have made strong investments in refined data allowing stakeholders to understand and target resources to meet the needs of the most vulnerable.

Relatively limited use of surveys

When compared with the health sector, the education sector tends to suffer in its use of survey data. Extensive and deep household surveys used in the health sector, such as the USAID-initiated Demographic and Health Surveys (DHS) and the UNICEF-initiated Multiple Indicator Cluster Surveys (MICS), were innovations at one time. They were sustained and worked on for decades, resulting in at least some 580 country/year applications where deep and extensive information about a population's health is derived from complete surveys (including some education information). Policymakers have come to rely widely on such surveys. These surveys are financed by more than one donor in a reasonably coordinated manner: They tend to have institutional stability by now.

While the education sector has nothing similar to the health sector, it too has had some survey innovations. For example, the Annual Status of Education Report (ASER), pioneered by the NGO Pratham in India, has morphed into the People's Action for Learning (PAL) Network. PAL is a network of citizen-led assessments that aims to carry out assessments of children's learning based on household surveys.[24]

Lack of a turnkey or "EMIS in a box" approach

In the education sector, several good attempts have been made to create a turnkey or "EMIS in a box" that can catalyze development of data systems, popularizing a toolkit that can be used in even the most constrained contexts. While some of these attempts are still being used, such as OpenEMIS, they have not had the donor/private sector/NGO coordination and institutional perseverance seen in the health sector. Policy entrepreneurs in the health sector receive consistent funding. For example, led by the University of Oslo, they pioneered the creation of a turnkey, or "in a box," health management information system (HMIS) known as DHIS2, which has been financed by multiple donors, over several decades, and has an increasing client base across ministries of health. Innovators at the University of Oslo have worked patiently on the system over the years, making gradual improvements based on client and funder inputs as well as on their own perceptions of the usefulness of their innovations.

Innovating through the use of unusual informants

The health sector is innovating with approaches that use present alternatives to the use of surveys as a source of information for action. These approaches use permanent, localized informants, responsible for a particular district, to detect particular problems, including nonrecurrent ones, and to report quickly via a cellphone system. This approach eliminates the need to organize a survey each time something needs to be ascertained. Examples of this approach are the Coconut Malaria System,[25] the Performance Management and Accountability 2020 system[26] and the data systems for managing neglected tropical diseases (NTDs).[27] These systems have also tended to be supported and sustained over time, or at least

[24] "People's Action for Learning Network" (website), PAL Network, accessed May 7, 2018, http://palnetwork.org/.

[25] "Coconut Surveillance," RTI International, November 8, 2017, accessed May 7, 2018, https://www.rti.org/impact/coconut-surveillance.

[26] "PMA2020" (website), PMA2020, April 23, 2018. Accessed May 7, 2018. https://www.pma2020.org/.

[27] "Integrated NTD Database," World Health Organization, September 21, 2017, accessed May 7, 2018. http://www.who.int/neglected_diseases/data/ntddatabase/en/. With regards to guinea worm, the aim is to entirely eliminate the disease. Success has meant that it is getting harder and harder to find individuals to treat to eradicate the disease. A very

more so and on more plentiful examples, than similar innovations in education. Premise Data, a private company, has also experimented with this approach for more commercial uses.[28]

A summary of lessons learned from the health sector

As can be deduced, at least three traits characterize health sector successes in data, which have combined to generate sustainability and effective replication:

- Strong coordination by development partners, development agencies and countries. Most of these efforts have had more than one funder and are sustainable. No one agency goes it alone.
- Investments are often through the selection of a small number of specific indicators that receive global priority (for example, the under-five mortality rate), in part because these indicators can be used to support a measure, act and re-measure approach. They are specific and useful for monitoring the outcomes of programmatic investments and policy innovation.
- Data entrepreneurs play an important role by actively brokering finance and interest from development agencies and creating demand for data innovations among DCPs. Those leading these efforts—be they at a United Nations agency such as UNICEF (MICS), a place of higher education such as the University of Oslo (DHIS2) or a private company such as ICF International (the current implementer of DHS surveys)—have played a catalytic role in moving national health sector data beyond business as usual.

Data utilization or demand-side gaps

A second broad challenge for the education sector is how data are used—specifically, the need to increase stakeholders' sense of need for the data, including, first and foremost, ministries of education. This is not just a matter of presenting data in more attractive and easier-to-read formats. While more user-friendly formats may reduce the cost of cognitively "acquiring" the data, they do not truly motivate stakeholders to have a deeply felt need for the data. To create demand for data, systems need to analyze stakeholders' motivations. For example, stakeholders may be more motivated by a sense of fairness, or they may be energized when they see evidence of success from their interventions. Using data to support stakeholders' motivations is what drives ownership for results from school, community and district levels to national stakeholders and policy cycles.

To gain a better understanding of the utilization challenge, cross-national findings from the SABER diagnostic tool developed by the World Bank for benchmarking the quality of national EMIS were examined. Of 19 specific categories identified as key to a well-functioning EMIS, there are five in which performance is particularly poor (below the 25th percentile of performance). Of those five, four fall into the "utilization" category (see Annex B). As illustrated in Table 3, such issues as openness, whether there is a data-driven culture, whether findings get disseminated and accessibility of data all relate to the actual utilization (demand side) of data in decision-making and communication to society, particularly when it comes to quality and learning.

World Bank SABER diagnostic for EMIS
Specific categories of low performance
Openness (under broad category of Utilization in Decision-making)

clever data process has developed where localized informants are paid more and more to identify the few remaining individuals with the illness—a sort of "data auction" for a social purpose.

[28] "Premise – Get the Ground Truth," Premise Data, accessed May 7, 2018, http://www.premise.com/.

Data-driven Culture (under broad category of Enabling Environment)

Effectiveness in Disseminating Findings (under broad category of Utilization in Decision-making)

Integrity (under broad category of Data Quality)

Accessibility (under broad category of Utilization in Decision-making)

Source: Based on data of the World Bank SABER (Systems Approach for Better Education Results) database, Washington, DC, http://saber.worldbank.org/index.cfm?indx=8&pd=2.

Lack of bottom-up and top-down approaches to data utilization

A common central problem in many developing country data systems is that schools typically report information up—responding to what the authorities request. Reporting is seldom a byproduct of a well-implemented system for using data at the school or district level. In many cases, local stakeholders often do not see the data again after the reporting process is completed.

Ministries of education often disseminate only national (or, at the lowest, district level) aggregates of key indicators: national pupil-teacher ratio, national percentage of qualified teachers, etc. Ministries commonly do not publish or share with schools (or districts) "whole" pictures of schools that track inputs and results, and, above all, results given inputs or results given environmental conditions (e.g., poverty).

As a result, it is difficult for anyone, especially individual schools (or their most immediate supervisors and supporters at the district level), to have a holistic picture of their performance, which could then be compared with others. Education officials at individual schools can support general planning but cannot help local stakeholders and managers do better. Only in a few of the more adventurous countries are there attempts to show "scorecards" for schools (or, sometimes, districts), as will be discussed below.

Data seldom used to complete the measure/act/re-measure cycle

As part of the general syndrome of "just reporting up," data are too seldom used to complete a cycle of intervention that can improve children's education outcomes. A useful case in point is the comparison between efforts that just report data and very similar efforts, by similar actors, that report data but also then use the data in an improvement cycle.

Thus, data interventions that simply inform citizens as to poor learning results (such as Uwezo[29]), *if taken alone*, have been a little disappointing in their impact on actually improving learning results.[30] Pratham, on the other hand, the NGO that pioneered these sorts of assessments, has used their learning assessments to support schools and teachers in improving teaching and learning, with good results.[31] In the rest of India, after several years of these assessments, however, results do not seem to have improved, at least as measured by the assessments themselves. The contrast between those interventions that simply inform and those that measure (and inform), act and re-measure is telling.

[29] Uwezo is an initiative to improve competencies in literacy and numeracy among children ages 6-16 years old in Kenya, Tanzania and Uganda, by using an innovative approach to social change that is citizen driven and accountable to the public. See http://www.uwezo.net/.

[30] Daniel Plaut and Molly Jamieson Eberhardt, *Bringing Learning to Light: The Role of Citizen-Led Assessments in Shifting the Education Agenda* (Washington, DC: Results for Development, 2015), http://www.r4d.org/resources/bringing-learning-light-role-citizen-led-assessments-shifting-education-agenda/.

[31] J-PAL, "Teaching at the Right Level: Summary of Interventions," accessed May 7, 2018,

Figure 3. Two public schools, same country

Under-utilization of comparisons and ratios

Few countries carry out school-by-school or district-by-district comparisons of inputs used per child, either plainly or in comparison to outcomes, and fewer still actively share this with communities. As a result, there are cases where one district uses five, 10, 100, or even 1,000 times more infrastructure, paper, food or fuel per child than another district, without any particular rationale (or noticeable positive impact). This sometimes arises from the lack of calculation of simple ratios of cost or input use per student and making comparisons across districts. Calculating ratios and then disseminating them has been found to be an effective way to create demand for data.[32] Figure 3 illustrates this fact with respect to infrastructure; it shows two *public* schools in the same country, perhaps one hour from each other (admittedly, one is a primary school, the other secondary, and it is a fairly extreme case).

Need for increased reporting at school level

Some countries do report reasonably good data at the school level, using very simple but effective mechanisms. These countries often outperform other countries, though one should not overemphasize any direct causality—maybe they are good at using data and also happen to be good at producing results, because both are moved by a third factor denoting generally good management. For example, Kenyan schools traditionally often post, on a very simple public chalkboard or with marker ink on paper, the school's academic results and the money it uses, for the stakeholders (parents, community in general, teachers themselves) to see (see Figure 4 for an example). Little or no paper is used, the data are very simple and at least the stakeholder leadership of the community will understand the numbers. One key input and one key output are portrayed—perhaps those the parents care most about, or at least those the principals, or the ministry, imagine parents care about. Kenya tends to perform surprisingly well on the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) assessment, especially relative to its income per capita and level of educations pending. Whether its use of information is causal is hard to say.

[32] Abdul-Hamid 2017.

Figure 4. Self-produced, simple, holistic information in a Kenyan primary school

Credit: Luis Crouch

Left: A display on education finances; right: enrollment figures and examination results

Need for better data integration and duplication avoidance

Many data systems suffer from what might be called an "opposite-extremes problem." At one extreme, too much data are collected by too many actors through special-purposes surveys, exasperating teachers and school officials. At the other extreme, there is available data across sectors (for example, health, poverty) and within the education sector (for example, exams, cost, infrastructure), which, if integrated, could provide holistic portraits of schools. However, this integration seldom happens.

To provide a comprehensive view of each school (or even district), ideally data from other sectors and subsectors within the education ministry would be considered. For example, determining whether a school's or a district's children are mostly very poor or unhealthy matters a great deal in relation to understanding and managing that school's or district's performance. However, poverty and health data are seldom used to better understand school-by-school or district-by-district performance (if school-by-school performance is indeed analyzed). Additionally, data on supplies, quality of infrastructure and cost mixed with exam results data can be useful to better understand a school's performance, including positive and negative performance outliers worth emulating or supporting. But this is seldom done.

6. Potential areas for investment under the KIX data theme

Consultations reinforced the need for better coordination to strengthen education data systems, both within countries and across global actors. They also highlighted the importance of building capacity on gathering and using data at every level of the system, from the classroom to the ministry, and pointed to a need to focus on how EMIS data are communicated. Both written feedback through a participant self-assessment and comments made during the conference were incorporated into the current version of the document and the recommended investment areas.

For example, participants noted a demand for guidance for the "EMIS in a box" options and also for tools for assessing how EMIS functions in a given country. A variety of these diagnostic tools are offered by

various international organizations, but DCPs requested either a convergence of the existing tools or a guide as to which tools are suitable for which purposes. This feedback was used to develop the recommendation on creating a unified EMIS diagnostic tool.

Additionally, countries explained that they needed balanced support from international organizations for their EMIS. They do not want to be dependent on international organizations, but rather they wanted them to think together about what a road map for eventual independence would look like. However, they also believed that for some countries, a bigger push by international organizations could help them plan for sustainability and support EMIS units (and perhaps ministries as a whole), and advocate with ministries of finance for improved budgets for data. The capacity-building elements in the potential areas for KIX investment respond to this suggestion from DCPs.

Based on discussion with partners, several areas for potential investment and creation of global goods have come to light (see Table 4).

Table 4. Potential areas for KIX investments under the data theme

Areas for investment	Potential global goods
1. Strengthen national capacity through global and regional investments in knowledge transfer, capacity development and learning exchange	Creation of regional or global hubs to support country capacity to improve collection, management, and use of data
	Signposting/streamlining of existing EMIS diagnostic tools, and development of coherent and coordinated standards for data systems
	Development of modular, open source and adaptable EMIS-in-a-box solutions, especially for fragile and conflict-affected settings
2. Invest in evidence/evaluation	Creation of evidence on user needs and habits at the school and district levels to inform EMIS design and improve data utilization
	Documentation of best practice in the production and use of child-level records in education for sharing across the partnership
	Documentation and assessment of opportunities to use technological innovations to improve data availability and use
3. Innovation	Piloting of new approaches for including new types of data and data from multiple sources: • On underserved populations in out-of-school children, children with disabilities, children from displaced populations, in EMIS • Data from multiple sources at the national level • Integration of learning assessment
	Creation of a cross-national digital platform for combining and sharing education data across countries
	Piloting of innovative approaches to data presentation and visualization, to support real-time use of data

With the caveats around sample size and distribution of respondents noted in section 2 above, the CHNRI exercise described previously reinforces two key messages.[33] First, across both DCPs and international experts, there is clear appetite for initiatives that improve data utilization, communication and visualization (i.e., correspond to the demand-side issues with respect to use of data). The CHNRI findings also suggest that DCPs show high levels of agreement, particularly on "pilot(ing) innovative approaches to data presentation and visualization, to support real time use of data" as the most relevant and responsive tool for improving data systems within their context. As a second priority, DCP respondents strongly agreed that piloting new approaches for including new types of data and data from multiple sources is a useful investment. It is also worth noting that while there was still a preference for areas that focused on data utilization, there were relatively high levels of disagreement across international experts on which initiatives would be most beneficial.

[33] A full report on the CHNRI exercise around the data theme is available on request.

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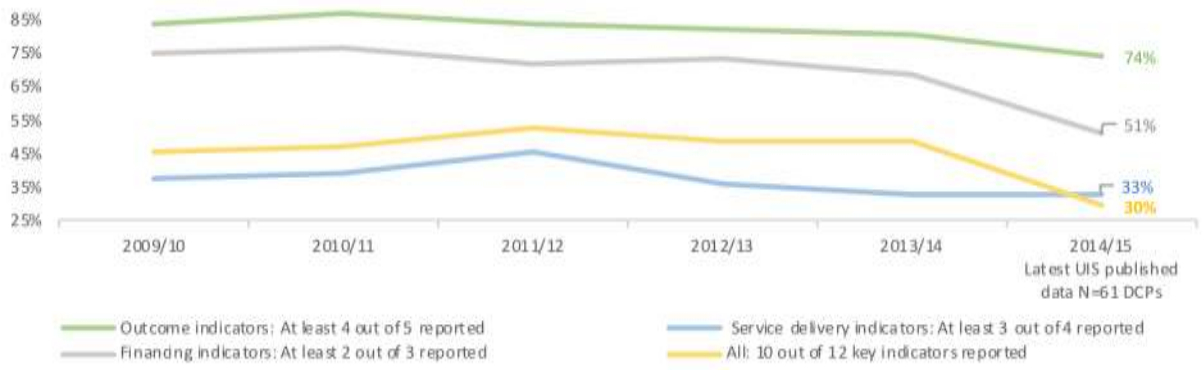
Annex A. GPE factsheet on data reporting

Indicator 14 of GPE's results framework tracks the proportion of DCPs that report at least 10 out of 12 key education indicators to the UIS.[34] Overall, 30 percent of DCPs (18 out of 61) reported at least 10 out of 12 key indicators to the UIS for 2015 (latest data available), down from 43 percent (26 out of 61) for 2014. Similarly, 21 percent of countries affected by fragility and conflict (FCACs) (6 out of 28) met this requirement for 2015, down from 39 percent (11 out of 28) in 2014. An examination of data from 2010 to 2015 shows that reporting on service delivery indicators has been consistently problematic, while reporting on financing indicators, which was significantly better up to 2014, dropped off in 2015.

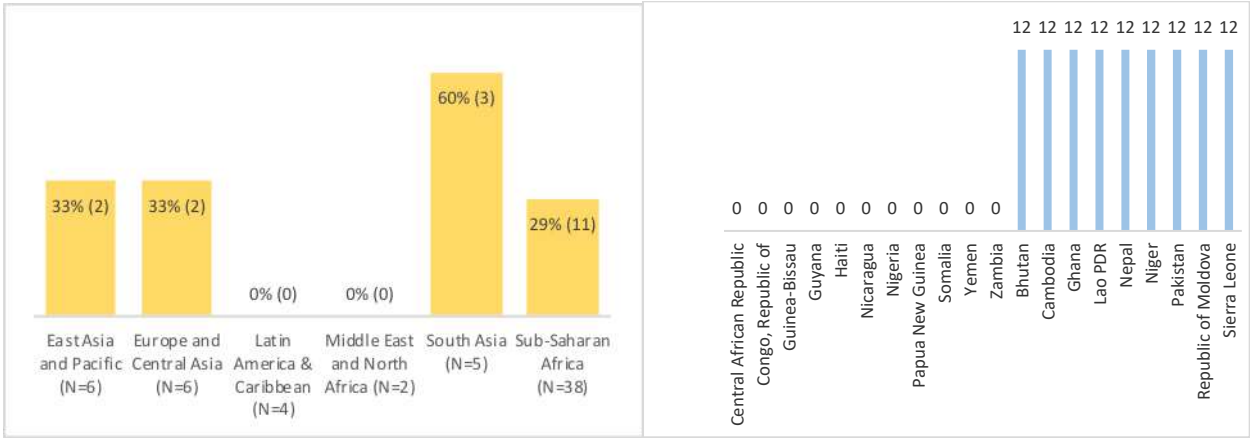
Proportion of DCPs reporting key education indicators to the UIS by category of indicators, 2010-2015



A disaggregation by region shows that significant challenges in data reporting remain across all GPE regions. Looking across DCPs, there are significant variations in their reporting of data.

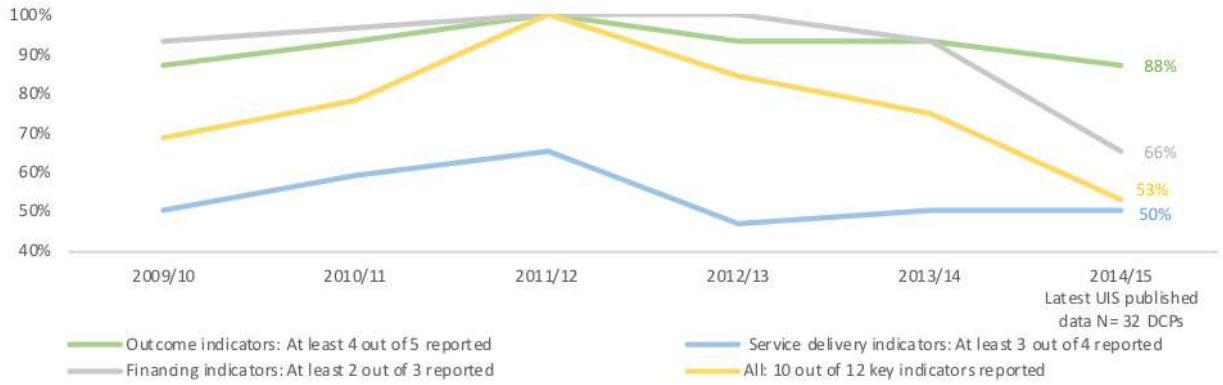
Proportion of DCPs reporting 10 out of 12 key education indicators to the UIS by region, 2015 (N=61)
Highest and lowest performing DCPs by number of indicators reported to the UIS, 2015 (N=20)

[34] For the list of 12 key education indicators and other methodological details, please see the methodology sheet for indicator 14. The 12 key education indicators are divided into three categories: outcome indicators (that primarily measure access to basic education), service delivery indicators (that relate to the availability of teachers and teacher training) and financing indicators (that relate to domestic public expenditure on education).



A key challenge in this area appears to be that DCPs were unable to sustain the practices to collect and/or report data to the UIS, once they had been accomplished or established. In 2012, 32 out of 61 DCPs reported at least 10 indicators to the UIS. However, in 2015, only 50 percent of these 32 DCPs reported at least 10 indicators.[35] This may be due either to reduced capacity or delays in reporting processes at the country level. It is also possible that an underlying cause of this decline may be slower processing and quality assurance of this data at the international level.

Proportion of DCPs reporting key education indicators to the UIS, by category of indicators (out of DCPs that reported at least 10 out of 12 key indicators in 2012), 2010-2015



[35] Of the 18 countries counted as reporting to the UIS for 2015, only two had not met the benchmark of 10 indicators in 2014.

Annex B. Analysis of system functions from a SABER-EMIS Sample of Countries

Ranking of data system functions, derived from SABER-EMIS				
Broad category	Category score	**Narrow category**	Category score	Categories below 25th percentile
Utilization in Decision-making	0.22	Openness	0.12	XXXX
Enabling Environment	0.32	Data-driven Culture	0.18	XXXX
Utilization in Decision-making	0.22	Effectiveness in Disseminating Findings	0.21	XXXX
Quality Data	0.38	Integrity	0.24	XXXX
Utilization in Decision-making	0.22	Accessibility	0.25	XXXX
Enabling Environment	0.32	Legal Framework	0.26	
Utilization in Decision-making	0.22	Operational Use	0.26	
Enabling Environment	0.32	Budget	0.27	
System Soundness	0.32	Data Analytics	0.27	
System Soundness	0.32	Data Coverage	0.29	
Enabling Environment	0.32	Human Resources	0.31	
Quality Data	0.38	Periodicity and Timeliness	0.34	
System Soundness	0.32	Dynamic System	0.35	
System Soundness	0.32	Data Architecture	0.35	
System Soundness	0.32	Serviceability	0.39	
Quality Data	0.38	Methodological Soundness	0.41	
Enabling Environment	0.32	Infrastructural Capacity	0.43	
Quality Data	0.38	Accuracy and Reliability	0.46	
Enabling Environment	0.32	Organizational Structure	0.67	
Average			0.32	

Source: Based on data of the World Bank SABER database, Washington, DC, http://saber.worldbank.org/index.cfm?indx=8&pd=2.